STRATEGIES AND ACTIONS TO RECOVER PUGET SOUND TO HEALTH

A: UPLAND AND TERRESTRIAL

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Upland and Terrestrial

The protection and restoration of upland and terrestrial systems is fundamental to the health of Puget Sound, yet land development and associated human land use activities have damaged many of the underlying processes that support these systems. The elements of a successful approach to upland and terrestrial systems must ensure that land use and land development practices are carried out in a sustainable fashion; flood hazards do not harm people, residences, and transportation; freshwater quality and quantity supports freshwater and terrestrial food webs and human uses; groundwater levels as well as river and streamflow levels are sufficient to sustain people, fish, and wildlife; salmon are abundant and populations are significantly increasing throughout Puget Sound; species are protected and biodiversity is enhanced; and non-native species do not impair the complex functions of the Puget Sound ecosystem.

This chapter describes seven overarching strategies that are essential to the protection and restoration of upland and terrestrial systems:

- **A1** – Focus land development away from ecologically important and sensitive areas;
- **A2** – Protect and restore upland, freshwater, and riparian ecosystems;
- **A3** – Protect and steward ecologically sensitive rural and resource lands;
- **A4** – Encourage compact regional growth patterns and create dense, attractive, and mixed-use and transit oriented communities;
- **A5** – Protect and restore floodplain function;
- **A6** – Protect and recover salmon;
- **A7** – Protect and conserve freshwater resources to increase and sustain water availability for instream flows.

The 2020 ecosystem recovery targets most related to the protection and restoration of upland and terrestrial ecosystems are:

- Land development;
- Land cover – forestland and riparian;
- Floodplains;
- Summer stream flows;
- Wild Chinook salmon.

Reduce Pressures on Puget Sound from Land Development

The Challenge

Land cover and land development are essential contributors to the health of both terrestrial and aquatic ecosystem processes and habitats. Due to land conversion from growth and development pressures, many Puget Sound habitats have been reduced in size, diminished in quality, and fragmented, and the ecosystem processes (e.g., water quality, flow, and retention) that form and sustain these habitats have been degraded and disrupted. During the past 50 years, Puget Sound has lost at least two-thirds of its remaining old growth forest, more than 90 percent of its native prairies, and 80 percent of its saltwater and freshwater marshes (PSP Topic Forum Discussion Paper, Habitat and Land Use, 2008).

Essential to our ability to protect the resources that remain will be encouraging density in urban areas, protecting rural working lands, and avoiding sprawl. Population growth and residential and commercial development are elements of a healthy economy and are not per se what threatens Puget Sound health and recovery; rather, it is *where* and *how* the growth and development occur that can result in adverse pressures on ecosystem functions.

Tools to protect key ecosystem processes include regulatory programs, acquisition programs, partial acquisition of development rights or conservation easements, and conservation leasing. Special designations such as Wilderness, Wild and Scenic Rivers, and Outstanding Water Resources can be used to ensure long-term protection. Acquiring development rights from highly productive working resource lands, such as farms and forests, is an effective way to protect ecosystem processes/structures while ensuring long-term productivity of working landscapes and rural communities.

There are a number of sub-strategies in this section for which the National Estuary Program Watershed Grant has identified pilot projects to fund. Ecology and Commerce, the lead agencies for that grant, will continue to fund and provide technical support for pilot projects at the local level aimed at implementation of these sub-strategies.

Climate Change

Many of the impacts of climate change have links to land cover and land development. In particular this includes risks to fish, wildlife, and natural systems from habitat degradation and loss, as well as risks to the agriculture and forestry industries. *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (April 2012) identifies several high-priority, overarching strategies with a connection to reducing pressures from land development. These include:

- Reducing forest and agricultural vulnerability to climate change impacts. This strategy includes conserving productive and adaptive farmland and forests.
- Safeguarding fish and wildlife and protecting critical ecosystem services that support human and natural systems. This strategy includes protecting and restoring habitat.

The strategies, sub-strategies, ongoing programs, and near-term actions in Sections A1-4 directly implement the state climate response strategy. More detail on the agricultural and forestry strategies is included in Section A3. Additional climate adaptation work will continue to be needed in the future.

Relationship to Recovery Targets

In October 2011, the Partnership's Leadership Council adopted land cover and land development recovery targets. Broadly speaking, the indicators and targets measure the where, how, and extent of land development and conversion. Strategies for reducing pressures from land development include efforts to identify and focus land development away from ecologically important and sensitive areas; protect and steward ecologically sensitive rural and resource lands; and encourage compact regional growth patterns and create dense and attractive communities.

The land cover and land development targets are:

- Land cover dashboard target: By 2020, average annual loss of forested land cover to developed land cover in non-federal lands does not exceed 1,000 acres per year and 268 miles of riparian vegetation are restored or restoration projects are underway.
- Land development pressure reduction target 1: Basin-wide, by 2020, loss of vegetation cover on indicator land base over a 5-year period does not exceed 0.15 percent of the 2011 baseline land area.
- Land development pressure reduction target 2: By 2020, the proportion of basin-wide growth occurring within Urban Growth Areas is at least 86.5 percent (equivalent to all counties exceeding goal by 3 percent) and all counties show an increase over their 2000–2010 percentage.

Local Priorities

Some local areas have prioritized land development strategies.

Local Integrating Organization	Priorities
South Central	*Theme* • To effectively deal with pressures and threats, desired outcome and actions will have to be tailored to land uses and development patterns while working toward a Soundwide target.

Local Integrating Organization	Priorities
West Sound	*From working strategy list* • Methodically monitor and report key metrics related to population growth and development for adaptive management and to minimize urban sprawl • Develop framework for identifying and prioritizing areas for conservation; identify areas at risk and strategies to protect/prevent their development
Hood Canal	*High Priority* In coordination with the US Navy and other partners, HCCC will complete the In Lieu Fee (ILF) Mitigation Program by June 30, 2012.
Whatcom, Hood Canal, Stillaguamish-Snohomish, Island, and Skagit	These areas have all identified general strategies to focus land development away from ecologically important and sensitive areas.

A1. Focus land development away from ecologically important and sensitive areas

Protecting high quality ecological areas is less expensive and more effective than trying to repair or restore damaged areas. In an effort to maintain a balance of development and protection, the sub-strategies recognize that population growth is an integral part of the regional economy, but aim to focus land development away from areas in the Puget Sound that are ecologically vulnerable and important to maintain. In the near term, the sub-strategies focus on identifying what lands are ecologically important and where they are located in Puget Sound, making this information available to local jurisdictions, and equipping them with information they need to make decisions consistent with the overall strategy of focusing development away from ecologically sensitive areas.

A1.1 Identify and prioritize areas for protection, restoration, and best suitable for (low impact) development.

Ongoing Programs

The Puget Sound Watershed Characterization's (PSWC) assessment of Water Flow, Water Quality and Biodiversity importance of Puget Sound Basin lands and waters is an important tool used to identify ecologically sensitive areas. This assessment, when used in conjunction with other watershed information and data can help identify which areas should be protected from new development and those areas appropriate for low impact development. Applying the information in the Characterization should direct land development away from ecologically important areas and the results are used in several of the strategies in A1, A2, A3, and A4. The Characterization incorporates many of the same data sets used in related regional analyses conducted by Department of Natural Resources (DNR) (Aquatic Landscape Prioritization), The Nature Conservancy, Washington Department of Fish and Wildlife (WDFW), Washington Biodiversity Council, and Washington Habitat Connectivity Working Group and is therefore an important and appropriate tool for identifying ecologically important lands for the purposes of this effort. In addition to the Watershed Characterization tool, use of the strategy

assessment of the Puget Sound Nearshore Ecosystem Restoration Project, maps produced by the Washington Wildlife Habitat Connectivity Working Group, and the Puget Sound Salmon Recovery Plan, with each of its 14 watershed chapters, should help to tailor information to each watershed and support decisions for what areas to protect.

The Puget Sound Watershed Characterization is a set of spatially explicit water and habitat assessments that provide information for regional, county, and watershed-based planning. It is a coarse-scale decision-support tool that will enable better land use decisions and more effective protection, restoration, and conservation of our region's ecologically sensitive areas. The assessments cover the entire contributing drainage area of Puget Sound and represent the physical, chemical, hydrologic, wildlife, freshwater and nearshore habitat, and human attributes of this landscape that support and interact with the structure and function of ecosystems in Puget Sound. Although based on generalized data, they provide a regional-scale perspective on the spatial distribution of these attributes and impacts that is not generally provided by other available tools. The intended audience is local planners and watershed managers, tribes, the Partnership and other state agencies, city and county governments, and other resource managers including NGOs.

The PSWC, which was a high-priority action in the 2008 Action Agenda, is a decision-support tool, not a decision-making tool. It is structured to provide an overview of likely conditions, problems, and opportunities based on GIS information, organized and analyzed in accord with well-established scientific principles. These analyses can be refined to help support a variety of actions, such as final decisions on priority efforts, designations of changed Urban Growth Areas, or specific on-the-ground actions, typically requiring further levels of local data and information and expertise not provided by the regional-scale maps or tables. The Watershed Characterization Technical Assistance Team (WTAT) is funded in 2012 to develop solution templates and integrate these templates within a decision support framework for water flow, water quality and habitat data and assessments e.g., from Watershed Characterization Project and PSNERP, and other watershed data. To leverage local expertise, the WTAT will work with the Partnership's "User Group" consisting of local government planners previously established to review and comment on the effectiveness and usefulness of Puget Sound Characterization products. The templates and decision support framework is designed to address specific solutions to known environmental problems, using refined knowledge of ecosystem processes, and initial field testing and monitoring to apply and adaptively manage proposed solutions. The goal is to achieve meaningful changes in the local regulations affecting development practices throughout Puget Sound, in concert with upcoming local government Growth Management Act (GMA) review and update processes.

Stream typing maps, also part of the 2008 Action Agenda, were developed and are maintained by DNR for purposes of implementing the Forest Practices Act and Rules. The maps classify streams and other water bodies in terms of whether or not they are used by fish, and perennial or seasonal flow. They are provided as a starting point to help forest landowners identify and type streams on their property. Forest landowners are required to determine, in the field, the water types within their harvest area and include them on their forest practice application. While some local government entities (LGE) also use these maps for land use regulation, DNR does not require their use nor do they maintain the maps specifically for LGEs.

The stream typing maps are updated through a concurrence process managed by DNR. Water types can be updated by following a specified protocol and the priority for water type updates is streams and other water bodies on forestland subject to the Forest Practices Act and Rules.

The Washington Department of Fish and Wildlife (WDFW) maintains a number of GIS databases that contain information on the known location of Priority Habitats and Species (PHS) in Washington State. PHS is a source of best available science that can inform local planning activities, development projects, conservation strategies, incentive programs, and numerous other land use applications. This data has also been used in several landscape assessments including The Nature Conservancy's eco-regional assessments, the Biodiversity Conservation Opportunity Framework Maps and the Puget Sound Basin Characterization. This database is available online in an interactive map and management recommendations to guide how to protect priority habitats and species is also available on-line. Please visit http://wdfw.wa.gov/conservation/phs/.

The Natural Heritage Program collects and manages statewide ecosystem data. The Natural Heritage database has spatial information about important native, intact, and rare ecosystems. The program has published a draft field guide to Washington ecological systems, available through the DNR website, and has key expertise in the state's ecosystems, including Puget Sound.

Many local communities at the watershed, city or county level, have detailed data and maps that help inform local planning. Much of this data is a finer scale that the Soundwide work.

Key Ongoing Program Activities

- Ecology and WDFW complete the Puget Sound Basin Characterization by 2012.
- DNR, in consultation with Ecology, WDFW, and tribes, will continue to process stream typing updates for streams in the Puget Sound basin through 2013.
- DNR, working with key partners, shall seek to secure adequate and sustainable long-term funding for the Natural Heritage Program.

SALMON RECOVERY

Protection of Habitat – A Salmon Recovery Plan Priority: Protecting our existing habitat that supports salmon recovery efforts is a key priority for the Recovery Plan. The habitat restoration components of the Plan are based on an assumption that the existing habitat, as of 2005, would be preserved. The Plan also identified more assessment needed to understand how and whether the existing habitat protection infrastructure (regulations, incentives, technical assistance, and education/outreach) is being successful. Two papers released in 2011 illustrated the need to do a better job in protecting and restoring critical salmon habitat in Puget Sound. The first was a report released by the National Marine Fisheries Service that assessed Puget Sound Chinook Salmon Recovery Plan implementation progress since it was federally approved in 2007. Closely following the NMFS report, the Treaty Tribes of Puget Sound and the Coast released a paper titled "Treaty Rights at Risk – Ongoing habitat loss, the decline of the salmon resource, and recommendations for change."

How are these priorities integrated: These two papers sparked a new intensive effort to respond to declining salmon runs. The federal agencies that have trust responsibilities to the tribes have been developing a new action plan to address the need to do a better job, and as that plan is developed, the Partnership's strategic priority to protect habitat may be expanded to incorporate the resulting actions.

Near-Term Actions

A1.1 NTA 1: **Apply Watershed Characterization Results. By 2012, Ecology, in collaboration with Commerce, will support local and regional entities' use of the PSBC results by creating easy web access to the information and an interagency Watershed Technical Assistance Team and by 2013, The Watershed Technical Assistance Team, managed by Ecology, will develop draft solution templates and a decision-support framework which will guide watershed planning and land use decisions by local governments. Development will occur in coordination with Commerce, WDFW, DNR, and local government representatives.**

Performance measure: By 2012 PSBC data is available to all local governments and team established. By 2013, status of standard development and status of decision making framework. (Measure dates to be confirmed)

A1.1 NTA 2: **Web-Based Data Tool to Support Land Use Decisions. By December 2012, the Puget Sound Institute will work with the Puget Sound Partnership and other state, federal, Tribes, local, and academic partners to develop a web-based tool to improve and support spatial landscape data collection, sharing, and analysis to improve the ability of agencies to make land use decisions based on watershed assessments and other local characterizations.**

Performance measure: Web-based tool completed by Dec 2012.

A1.1 WS 1: **West Sound Inventory of Transportation Infrastructure Projects. By January 2013, the West Sound Watersheds Council and West Sound LIO will develop a process for the review of transportation infrastructure projects that addresses environmental impacts and key fish passage barriers.**

Performance measure: Identify process for the review of transportation infrastructure projects that addresses environmental impacts and key fish passage barriers by January 2013.

A1.2 Support local governments to adopt and implement plans, regulations, and policies consistent with protection and recovery targets, and incorporate climate change forecasts.

Land use planning typically occurs on a jurisdiction-by-jurisdiction basis, with some coordination across cities and counties through countywide planning policies and occasionally on a multi-county scale through broader regional initiatives. Typically, a number of jurisdictions are involved in making land use and development decisions that affect a single ecosystem or watershed. Through this strategy and the corresponding sub-strategies, the Action Agenda is working to encourage local plans, regulations, and policies to be defined within a holistic watershed-based planning framework. This sub-strategy has the explicit purpose of incorporating relevant ecological, water quality, sediment quality, planning, and land development information into local decision-making processes.

Ongoing Programs

There are three main legislative acts that govern planning and land developing in the Puget Sound region – the Growth Management Act (GMA), the State Environmental Policy Act (SEPA), and the Shoreline Management Act (SMA). This Action Agenda builds off of these programs and identifies actions intended to accelerate, focus, and/or address gaps.

Currently, the Departments of Ecology, WDFW, and Commerce provide ongoing technical assistance to local jurisdictions to develop and adopt planning goals and policies that incorporate ecosystem characterization information and protection strategies. Ecology and Commerce are also co-leads on the Watershed Protection and Restoration Grant, providing pass-through money to local jurisdictions to implement the PSWC. These goals and policies encourage compact urban growth patterns, increased density, strategic redevelopment, and resource and rural lands protection. Ecology and Commerce are also collecting permitting and planning data from local governments to compare planned growth with watershed characterization information. Over time, it may be appropriate for state and federal grant programs to expressly prioritize projects consistent with Puget Sound ecosystem recovery goals, including establishing priorities for projects that encourage compact growth patterns, density and redevelopment, and rural lands protection.

Regional-scale planning and coordination is facilitated by the Puget Sound Regional Council (PSRC). The PSRC provides the central Puget Sound counties (King, Pierce, Snohomish, and Kitsap), cities and towns, ports, tribes, transit agencies, and the state an opportunity to build a common vision for the region's future – which includes the well-being of people and communities, economic prosperity, and a healthy environment.

This sub-strategy is aimed at helping local governments act in ways that are consistent with Puget Sound recovery and at identifying and providing incentives to local jurisdictions for implementing, monitoring, and enforcing regulations and permits that are consistent with the broader recovery targets for Puget Sound. Material to be used for identifying and providing these incentives includes, but is not limited to, the San Juan Initiative recommendations, programs being implemented through the salmon recovery plan, and material developed as part of the discussions around habitat protection at the federal, state, tribal, and local levels through the Recovery Council.

Local governments operate in a highly dynamic environment with various levels of laws and regulations governing planning for land development. They must balance economic and ecological pressures along with adherence to local, regional, and state laws and regulations. Further, local conditions, demographics, and preferences factor into local land use decisions. In our resource-constrained environment, the ability of local governments to implement and support the land cover and land development strategies is both the single most important success factor and also the most challenging. State funding for GMA implementation, education, and training has been, as of 2012, nearly eliminated during state budget reductions. Near-term action two under this sub-strategy will convene all partners for a broad-based discussion of state and local funding needs and responsibilities, and specific strategies for providing funding for local planning efforts that can be adopted during the 2013 legislative session.

Near-Term Actions

A1.2 NTA 1: **Land Use Planning Barriers, BMPs, and Example Polices. By December 2012, Ecology and Commerce, working with local governments, will identify the primary barriers to incorporating policies consistent with implementation of the Action Agenda into local land use planning and decisions and identify best practices and assistance needed to overcome these barriers. This will address implementation of protection strategies, encouraging compact growth patterns, increased density, water quality standards, redevelopment, and rural lands protection. By December 2012, Ecology and Commerce will distribute example growth policies that include best practices that are consistent with protection and recovery targets and the Growth Management and Shoreline Management Acts.**

Performance measure: Example growth policies distributed or not; extent to which local land use planning and decision making is consistent with the Action Agenda.

A1.2 NTA 2: **Financial Support for GMA Updates. Commerce will coordinate broad partner discussion of ways to promote state financial support for local governments for GMA comprehensive plan updates, implementation, training, and education. A proposal for financial support will be developed by December 2012 for discussion by the 2013 legislature.**

Performance measure: A proposal for financial support for local governments for plan and regulatory updates, implementation, training, and education will be completed by December 2012 with a goal of adoption by June 2013.

A1.3 Improve, strengthen, and streamline implementation and enforcement of laws, plans, regulations, and permits consistent with protection and recovery targets.

Local, state, and federal permitting programs all affect the type and kind of impact land development can have on the Puget Sound region. Identifying ways to strengthen and streamline elements of these permitting processes by making permitting decisions more predictable and efficient, and by making sure that information on where ecologically sensitive lands are located is considered, could help direct development to areas that are more ecologically resilient and encourage dense, compact growth patterns. Streamlining, in this case, is not intended to advocate the elimination of regulations, but rather efforts to help regulations be implemented more predictably and efficiently.

Near-Term Actions

A1.3 NTA 1: ECB Address Regulatory Exemptions. The ECB will address regulatory exemptions to provide effective oversight and mitigation sequencing for activities that impact the ecosystem (e.g., HPA and SMA).

Performance measure: By December 2013, deliver recommended changes to current regulation to the ECB.

A1.3 NTA 2: WRIA 16/14b will continue to implement prioritized actions from the Detailed Implementation Plan

Performance measure: WRIA 16/14b will continue to implement prioritized actions from the Detailed Implementation Plan.

~~None. Work under this sub-strategy will focus on implementation of ongoing programs and on identifying opportunities for strengthening and streamlining implementation as part of other efforts.~~

Comment [KG1]: New NTA proposed by Habitat SI committee

"There currently are no NTAs under substrategy A1.3, although the Habitat SI Subcommittee determined this to be a critical strategy for habitat protection and restoration. While several other NTAs address improvements to the HPA permitting process (B1.3, NTA1 & NTA2), it is important to close this loophole in order to ensure that the success of efforts to remove armoring around Puget Sound are not offset by construction of new bulkheads on single-family properties."

Comment [EDM2]: New NTA proposed by WRIA 16/14b

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A1.4 Ensure full, effective compensatory mitigation for impacts that cannot be avoided.

When impacts cannot be avoided, it is critical to achieve and maintain full compensatory mitigation. Historically, this has been very difficult to achieve; estimates vary but local, regional, and national studies show that most mitigation projects fail to fully achieve their intended goals and are not effectively replacing lost or damaged resources, habitats, and functions. To address this concern, Ecology initiated the Mitigation that Works effort which included a stakeholder process to develop a shared vision for successful mitigation and development of a number of short- and long-term recommendations related to improving the mitigation process and mitigation success.

Work under this sub-strategy will focus on ongoing implementation of Ecology's Mitigation That Works initiative, which includes efforts to establish and implement a watershed-based approach to mitigation; support development and piloting of innovative compensatory mitigation tools including market-based techniques and other approaches; and improve effectiveness monitoring programs for mitigation sites.

Near-Term Actions

A1.4 HC 2: **HCCC In Lieu Fee Mitigation. Hood Canal Coordinating Council (HCCC), in coordination with the US Navy and other partners, will complete the In Lieu Fee (ILF) Mitigation Program by June 30, 2012. HCCC, working with its partners in this process, will be in position to implement high priority actions from the ILF for 2013 and beyond.**

Performance measure: Complete ILF Mitigation Program by June 2012. HCCC, working with its partners in this process will be in position to implement high priority actions from the ILF for 2013 and beyond.

Emerging Issues and Future Opportunities

- Further incorporation of climate change considerations could include, but would not be limited to addressing habitat connectivity to preserve migration corridors, adding refugia considerations into land development planning, evaluating whether modifications to GMA, SMA, SEPA and other state programs are warranted, and integrating adaptation work into local plans.
- Continued improvements in the stream typing maps and uses.
- Evaluating the effectiveness of regulations.
- Identify when and how to provide direction to local governments when local planning is inconsistent with recovery needs.

A2. Protect and restore upland, freshwater, and riparian ecosystems

One of the primary strategies for the Action Agenda is protection of ecologically sensitive or vulnerable lands in the Puget Sound region. This series of sub-strategies is aimed at different facets of ecological protection. Protection in this context means identifying pieces of land that are of high ecological value and protecting them from development or further development. To assist in meeting these goals the Puget Sound Characteristics and Puget Sound Nearshore Ecosystem Restoration Project (PSNERP), as well as the help of the Puget Sound Watershed Technical Assistance Team, will be enlisted.

Local Priorities

Local Integrating Organization	Priorities
South Central	*Theme*: Local land use and environmental standards are essential for habitat protection and there is a need for better alignment between state standards and the targets being set for Puget Sound recovery; *Top Priority Strategies* • Acquire and/or protect high-value habitat and land at immediate risk of conversion. • Develop a strategic funding proposal for habitat restoration and protection priorities. • Work with local governments to develop and implement policies and regulations that advance Action Agenda implementation
San Juan Islands	*Tier Two* • Restore native vegetation, trees, and ground cover.
West Puget Sound	*From working priority list* • Participate in and support an effort led by Forterra to conserve 7,000 acres of forest and 1.8 miles of shoreline on Port Gamble Bay, through the Kitsap Forest and Bay Project.
Hood Canal	*From General Priorities* • Permanently protect larger tracts of forests – Participate in and support an effort led by Forterra to conserve 7,000 acres of forest and 1.8 miles of shoreline on Port Gamble Bay, through the Kitsap Forest and Bay Project. This spans two action areas. – Dabob Bay, Stavis • Implement and enforce existing regulatory programs of the counties (SMP, CAO, County Comprehensive Plan) and state • Improve financial and technical assistance programs aimed at fostering voluntary stewardship and improving re/development standards
Whatcom	*From working priority list* • Continue updating and implementing local CAO, GMA – Continue implementing, enforcing, and monitoring land use measures adopted for watersheds with designated overlay zones. – Continue implementing, enforcing, and monitoring land use measures adopted for watersheds with designated overlay zones. – Implement habitat restoration projects.

A2.1 Protect and conserve ecologically important lands at risk of conversion.

There are a significant number of private and public land protection programs and mechanisms. Local, state, federal, and private acquisition grant programs, land banks, and land conservancies use land protection mechanisms such as fee simple acquisitions, conservation easements, and leases. The preservation of intact, well-functioning land is a key strategy. The main challenges within the sub-strategy of protection through acquisition of property interests are ensuring sufficient land protection resources and implementing funding strategies that prioritize ecologically important lands. Especially as

local jurisdictions continue to face revenue losses and local services are reduced, offsetting funding in the future may be required.

Ongoing Programs

In 2007, the Washington State Legislature created the Habitat and Recreation Lands Coordinating Group (lands group) to improve the visibility and coordination of state habitat and recreation land purchases and disposals. The lands group is comprised of representatives from state natural resource agencies, non-profit organizations, local governments, legislators, private interests, and others. This group uses an established process for making state habitat and recreation land purchases and disposals more visible and coordinated. The process has three components:

1. The Annual State Land Acquisition Coordinating Forum brings together state agencies, local governments, non-government organizations, landowners, tribes, and citizens to learn about and share ideas on proposals for state habitat and recreation land purchases and disposals.
2. The Biennial State Land Acquisition Forecast Report gives information about the state land purchases and disposals that are being planned around the state.
3. The Biennial State Land Acquisition Monitoring Report shows whether state agencies achieved their initial acquisition project objectives.

The Washington State Recreation and Conservation Office (RCO) provides staff support to the lands group and also supports several grant programs that support the protection of habitat and recreation lands. In 2009, using the authority of the Partnership's fiscal accountability legislation (RCW 90.71.340), the RCO, PSP staff, stakeholders, and the two RCO funding boards (Recreation and Conservation Funding Board and Salmon Recovery Funding Board) identified policies to align the grant processes with the 2008 Action Agenda. This work resulted in the following changes to three of the largest RCO grant programs (Aquatic Lands Enhancement Account (ALEA), Salmon Recovery Funding Board (SFRB), Washington Wildlife and Recreation Program (WWRP) Habitat Conservation Account):

- Prohibit funding for any project designed to address the restoration of Puget Sound if that project is in conflict with the Action Agenda (effective January 1, 2010); and,
- Consider whether projects are referenced in the Action Agenda.

The U.S. Fish and Wildlife Service (USFWS) works cooperatively with landowners, communities, and tribes to foster voluntary stewardship efforts on private lands to help conserve species. A variety of tools are available under the Endangered Species Act (ESA) to help states and landowners plan and implement projects to conserve species. One tool is the Cooperative Endangered Species Conservation Fund (section 6 of the ESA), which provides grants to states and territories to participate in a wide array of voluntary conservation projects for candidate, proposed, and listed species. The program provides funding to states and territories for species and habitat conservation actions on non-federal lands. Washington Department of Fish and Wildlife (WDFW) has four grant programs available through the CESCF, including the Habitat Conservation Plan Land Acquisition, Habitat Conservation Planning Assistance, and Recovery Land Acquisition Grants.

In addition, using special designations to protect high priority lands is an important tool for Puget Sound recovery. Numerous special designation programs can be used to protect intact priority areas. These include the federal Wilderness Act, Wild and Scenic Rivers Act, Outstanding Water Resources, Department of Natural Resources (DNR) Natural Heritage Sites, Marine Protected Areas, Marine

Conservation Areas, Shellfish Protection Districts, and WDFW Priority Habitat Species areas, and many others.

The 2008 Action Agenda included an action to advocate for proposed Wilderness designations, specifically, supporting the Alpine Lakes Wilderness addition and the Pratt River Wild and Scenic designation; this is an ongoing effort. In addition, special designations have been suggested for other areas including, Wild and Scenic designation of the Middle Fork Snoqualmie River, Wild and Scenic designation of Illabot Creek in the Skagit basin, and Wilderness and Wild and Scenic designations for rivers and lands on the Olympia Peninsula and the Nooksack River basin. These ongoing protection efforts are critical and need additional and ongoing support.

Near-Term Actions

A2.1 NTA 1: **Community Forestry Conservation Act. DNR will work with Congress to encourage passage of the Community Forestry Conservation Act (HR 1982 and S 1105 of the 112th Congress), which would enable non-profit conservation organizations to use bonds to purchase private working forests for long-term environmental and economic sustainable management by 2013.**

Performance measure: DNR seeks passage by December 2013.

A2.1 NTA 2: **Updated Avoidance and Minimization Guidance. Ecology will reinforce the importance of avoiding and minimizing impacts to wetlands, particularly those with high ecological value and that are difficult to replace, by developing and implementing updated avoidance and minimization guidance.**

Performance measure: Guidance complete or not.

A2.1 NTA 3: **Port Gamble Land Conservation. Forterra, working in collaboration with Kitsap County, the Port Gamble S'Klallam Tribe, and the Suquamish Tribe, will coordinate funding and participation to secure the conservation of ~7,000 acres of land near Port Gamble, including ~2 miles of shoreline by March 2013.**

Performance measure: By August 2012, apply for state and federal funding. By March 2013, exercise option agreement.

A2.1 NTA 4: **Funding Mechanism for Properties at Imminent Risk of Conversion. PSP will work with the ECB funding committee to consider the development of a funding mechanism to rapidly acquire properties with high ecological value and imminent risk of conversion by 2013.**

Performance measure: Discuss the issue with the ECB funding subcommittee by December 2012 and determine if a proposal should be developed. If a proposal is to be developed, new measures would be developed by February 2014.

A2.2 Implement and maintain priority freshwater and terrestrial restoration projects.

Numerous upland and riparian restoration efforts are underway in the region. While it is important to focus on those that give the Puget Sound a big lift for recovery, it also is critical to recognize the potential for local stream-based restoration efforts to both make marked improvements to ecosystem health, contribute to salmon recovery, as well as further regional awareness of the benefits a healthy Puget Sound creates for people and improve individual understanding and commitment to actions that will protect and restore Puget Sound. There is nothing like healthy salmon returning to the stream in your neighborhood to bring home the way we all are connected to Puget Sound.

Once installed, restoration projects need to be maintained and monitored over time to ensure that they are functioning as intended, and adapted where needed. Innovative maintenance methods such as partnerships with conservation organizations and citizen volunteers should be considered.
Freshwater restoration projects cover rivers, streams, lakes, and wetlands; within that body of work, a major focus of the Action Agenda is the riparian restoration needed to reach the recovery target. These gains will come from implementation of existing high priority projects in the salmon recovery three-year work plans that are part of the NOAA-approved Chinook Recovery Plan, other adopted species recovery plans, flood hazard management plans, road decommissioning plans, Shoreline Master Programs, Growth Management Act programs, and local watershed assessments.

Local Implementing Organizations will need to look across these existing local plans to identify the highest priority projects in each area. When prioritizing river and stream projects for implementation local organizations should consider the hierarchical restoration strategy of Roni et al., (2002), including (1) habitat reconnection (e.g., culvert improvements, off-channel connections), where prior disconnection is among the problems; (2) road work (e.g., removal, improvement); (3) riparian vegetation restoration; (4) in-stream habitat restoration (e.g., wood and boulder placement); (5) nutrient enhancement; and (6) habitat creation (e.g., in-stream with wood and boulders, off-channel).

Private landowners should continue to be encouraged to undertake restoration projects. Existing programs need to continue, expand, and be coordinated to further and effectively encourage private landowners to undertake and maintain restoration projects. Incentives for industrial and commercial landowners may also be needed. There are numerous landowner programs that include incentives and technical assistance. The Conservation Commission, Conservation Districts, DNR, Washington State University Extension, Washington Sea Grant, local governments, and non-governmental organizations offer programs. Examples include direct financial incentives (e.g., grants, subsidized loans, cost-shares); indirect financial incentives (property tax relief); technical assistance (referrals, trainings, design assistance), recognition/certification for products or operations, and conservation leasing.

SALMON RECOVERY

Habitat Restoration – A Salmon Recovery Priority: Habitat restoration is an important part of recovery and needs to be done in a way that targets priority areas for ecosystem functions. Restoration priorities for each watershed are called out in Volume II of the Salmon Recovery Plan and then further developed out in each of the annual three-year work plans.

How are these priorities integrated: This strategy of the Action Agenda includes restoration of riparian habitat not covered by the floodplain strategy, fish passage, and other upland actions. Habitat restoration related to estuaries and the nearshore are in Section B. The Action Agenda incorporates the three-year work plans as part of what is needed to recover the Puget Sound in Section A6.1. Additionally, specific restoration projects are part of priorities of the Local Integrating Organizations.

Ongoing Programs

Ongoing programs related to this strategy include programs that implement species recovery plans (including salmon recovery three-year work plans implemented by the 15 Lead Entities), flood hazard management plans, road decommissioning plans, fish passage barrier removal via the Forest and Fish Agreement and other requirements, Shoreline Master Programs, Growth Management Act programs, DNR Aquatic Landscape Prioritization, and watershed assessments.

The Nooksack Tribe has been engaged in a wide variety of elk enhancement projects, and has successfully worked with partners to develop and implement continuing elk habitat enhancement and protection projects. The tribal priority is protection and restoration of terrestrial ecosystems of elk.

Major funding sources include Pacific Salmon Recovery Funding through the National Oceanic and Atmospheric Administration (NOAA), which provides funding for elements necessary to achieve overall salmon recovery, including habitat projects and other activities that result in sustainable and measurable benefits for salmon and other fish species; and Puget Sound Acquisition and Restoration (PSAR), a state capital program, which implements many of the Action Agenda and Salmon Recovery Plan's habitat restoration priorities. Other significant funding sources include the Estuary and Salmon Restoration Program (ESRP) and Family Forest Fish Passage Program. A number of commenters noted that more work is needed to strengthen stewardship incentive programs to increase the ability of private landowners to undertake and maintain restoration projects. This is an issue for discussion in future Action Agenda updates.

Near-Term Actions

A2.2 NTA 1: **Prairie and Oak Woodland Restoration. WDFW in consultation with DNR, USFWS, and Joint Base Lewis McCord, will implement priority prairie and oak woodlands restoration projects.**

Performance measure: Number of priority projects implemented; Milestones: Maintain a prioritized list of restoration activities. Work with South Sound partners to fund the restoration activities. Update list with completed action items.

A2.2 WS 12: **West Sound Priority Watersheds for Protection and Restoration. By February 2013, the Suquamish Tribe will develop a detailed protection and restoration plan for the upper Chico Creek watershed. By December 2013, the tribe will seek funding to undertake similar work for the high priority, refugia Curley and Blackjack Creek watersheds.**

Performance measure: By February 2013, protection and restoration plan for the Upper Chico Creek watershed; By December 2013, funding in place for plans for Curley and Blackjack Creek watersheds.

A2.3 Implement restoration projects in urban and developed areas while accommodating growth, density, and infill development.

Restoration in urban areas also is needed. Examples of work include replanting native vegetation, removing non-native invasive species, tree planting and maintenance, removal of bulkheads and bank regrading, setting aside portions of private lots for open space, day-lighting of creeks, and other stream restoration efforts. Many of these activities are supported by local conservation and volunteer groups and neighborhood groups. Actions associated with retrofitting stormwater infrastructure also contribute to freshwater restoration and to improvement and maintenance of water quality. Restoration actions in urban areas need to be considered in concert with the needs of these areas to accommodate anticipated growth.

Ongoing Programs

Many cities, counties, and organizations in urban and suburban areas have programs to encourage planting native vegetation and restoring creeks and streams. Protection of ecologically sensitive and important areas are also designated in critical area ordinances and shoreline management programs.

Near-Term Actions

None; work in the near term will focus on implementation of ongoing programs.

Emerging Issues and Future Opportunities

- Further incorporation of climate change considerations could include, but would not be limited to, planning restoration projects in freshwater and terrestrial ecosystems. For example, projected changes to hydrological regimes from climate change.

A3. Protect and Steward Ecologically Sensitive Rural and Resource Lands

Private forest and agricultural lands provide critical fish and wildlife habitat and other ecosystem functions, especially in highly productive lower elevation riparian areas. These lands, however, are at significant risk of conversion to non-farm and non-forest uses, particularly residential and commercial development.

Maintaining the vibrancy of agriculture is crucial to recovering Puget Sound and instrumental in providing a high quality of life in the region. However, farming in the Puget Sound basin faces an uncertain future. Global competition for agricultural commodities has reduced prices for Puget Sound farm products while costs of land and raw materials continue to rise. Low profit margins have forced many farmers out of business and farmland is being converted to other uses at an alarming rate. Rural areas have a low density of impervious surfaces and farmland provides greater flood plain function than developed areas. The continued loss of farms in the region and conversion to non-farm uses is not only detrimental to individual farmers and to the regional farm economy; but is detrimental to the recovery of Puget Sound.

Climate Change

As identified in *Preparing for Climate Change: Washington State's Integrated Climate Response Strategy (*April 2012), climate change impacts on forest lands include larger and more frequent fires, mountain pine beetle outbreaks, and changes in geographic range, growth, and productivity. Key impacts on agriculture include changes in crop productivity, decreases in water availability, increased stress from extreme events, reduced livestock productivity, increased stress from invasive weeds, diseases, and pests, and global economic impacts related to food production, processing, and transportation.

A high priority overarching state response strategy is to conserve productive and adaptive farmland and forests.

Forest-related adaptation strategies include:

- Conservation and restoration of healthy, resilient forests across ownership boundaries and large geographic ranges;
- Maintaining and protecting forest species and genetic diversity;
- Protecting, expanding and managing urban forests;
- Building capacity and support for maintaining, enhancing, and restoring resilient and healthy forests.

Agriculture-related adaptation strategies include:

- Protection of productive agricultural land;
- Reduction of impacts of severe droughts and floods;
- Prevention and control of invasive species;
- Engagement of agricultural communities in adaptation efforts.

The Action Agenda strategies for forest and agricultural land conversation help to implement the state strategy.

Forest Lands

According to the Washington State Forestland Database, developed by the University of Washington Rural Technology Initiative (RTI), about 972,000 acres of private forestland in western Washington are threatened with conversion. Population pressures, changing forest ownership patterns, and the desire for rural housing sites are fragmenting once continuous forests into smaller tracts that are economically and environmentally unsustainable. The potential risk of private forestland conversion is highest in the Puget Sound region. Forest conversion also eliminates major opportunities to leverage forest carbon sequestration to address climate change and also negatively affect biodiversity, fisheries resources, and open space. [7]

Agricultural Lands

In 1950, there were about 1.4 million acres of farmland in the region. Today, less than 600,000 acres remain – a 58 percent loss. If this rate of loss continues, we will lose the last acre of farmland in seven of the Puget Sound counties by 2050 and the last acre in 2065. In the fifteen-year period from 1982 to 1997, the Puget Sound region lost nearly 20% of its farmland and half of its dairy farms.[8]

Analyses indicate that an acre converted from agricultural to urban development produces ten to fifteen times the runoff and runoff-borne pollutants, including far higher concentrations of heavy metals, petroleum and other key pollutants. Farmland also promotes aquifer recharge and uses far less water than an equivalent area of urban development. At the same time, many salmon-bearing rivers and streams traverse farmland, which often results in degraded or removed habitat or changes to habitat. This creates a challenging dynamic between protecting farmland from urban development while also recognizing that some farmland is located in prime salmon habitat.[9]

Development in rural areas presents a particularly concerning pressure on the ecosystem because it is in those rural areas (including both forested and agricultural lands) where high-quality habitat and significant ecological processes remain partially or largely intact. Rural area forest cover and agricultural land is being converted to housing and other uses in five-acre and smaller patchwork patterns. The network of infrastructure (primarily roads, but also other utilities) constructed to serve such development further fragments the landscape, and interrupts or modifies the delivery, movement, and storage of water, sediment, woody debris, and nutrients, and impairs functions of fish and wildlife habitats for feeding, breeding, rearing, and migrating for numerous species. In addition, sea level rise projections pose a threat to potential future loss of agricultural lands, particularly in the Skagit, Snohomish, Stillaguamish, and Nooksack deltas.

[7] *Retention of High-Valued Forest Lands at Risk of Conversion to Non-Forest Uses in Washington State, Final Report,* Prepared for the Washington State Legislature and Washington DNR by the College of Forest Resources, University of Washington, March 25, 2009
[8] WSDA personal communication.
[9] Dennis Canty, Pacific Northwest Director, American Farmland Trust, Comment Letter to PSP, August 2011

SALMON RECOVERY

Protection of Working Lands – A Salmon Recovery Plan Priority: The Recovery Plan calls for the protection of working lands within the context of how these working lands contribute to salmon recovery. Many of the watershed plans in Volume II specifically call out this need and also speak to the fact that some working lands are located in areas critical to salmon – for example, some estuarine habitat is currently being farmed – and that it is important to find solutions to both sustain working lands and recover salmon. Watershed chapters such as the Whatcom, Skagit, Stillaguamish and Snohomish are areas where this is called out.

How are these priorities integrated: The restoration of habitat needed for salmon recovery is generally reflected in the strategies and actions associated with the protection of working lands as well as the restoration of habitat. However, more discussion and agreement about these slightly different areas of focus is needed. Where working lands are the same as the lands needed for habitat restoration, more flexibility and creativity in conservation tools may be needed to achieve both restoration and farmland protection.

Local Priorities

Several local integrating organizations prioritized forest and agricultural land conversation efforts.

Local Integrating Organization	Priorities
Whatcom	*From working priority list* • Limit forest and farm conversions to other uses such as residential, commercial, and/or industrial uses
Hood Canal	*From General priorities* • Protect, foster, and incentivize sustainable, working forests and farms (e.g., extinguishing development rights and other programs): Dosewallips, East Jefferson and Tahuya forest protection efforts • Form a Hood Canal forests and forestry focal group to develop and implement balanced approaches to conserving forests and forestry • Form a Hood Canal agriculture focal group (or three affiliated sub-regional groups) to develop and implement balanced approaches to conserving agricultural lands
Stillaguamish – Snohomish watersheds, Skagit Watershed	Conservation of forest and agricultural land is important in these areas and related strategies are under discussion.

A3.1 Use integrated market-based programs, incentives, and ecosystem markets to steward and conserve private forest and agricultural lands.

There are numerous incentive programs available for landowners to encourage stewardship and conservation. However, they are not well coordinated, lack adequate funding, tend to be opportunistic

rather than strategic, and are not being fully utilized or targeted at most important lands. In addition, the eligibility requirements may not address the resource impacts, The strategies contained in this Action Agenda support the prioritization of incentive programs toward the highest-priority ecologically sensitive and important lands.

Ongoing Programs

Programs include the Designated Forest Land and Open Space Tax Program as well as the Forest Riparian Easement Program, Riparian Open Space Program, the Family Forest Fish Passage Program and the newly established voluntary stewardship program established by HB 1886 in the 2011 legislative session, among others. There are also numerous federal incentive programs offered through Natural Resources Conservation Service (NRCS) and other federal programs.

Department of Natural Resources (DNR) offers and administers a variety of landowner assistance programs targeted primarily at private forest landowners. The Forest Stewardship Program is a nationwide program which provides advice and assistance to help family forest owners manage their lands. The program is cooperatively funded by the United Stated Department of Agriculture (USDA) Forest Services and state forestry agencies and offers stewardship assistance, technical assistance, educational materials, and financial/cost-share assistance. At DNR, the Forest Stewardship Program is administered by the Small Forest Landowner Office (SFLO).

The Voluntary Stewardship Program at the Washington State Conservation Commission (WSCC), created in 2011, requires counties across the state to either opt into the program or resume the process of updating their critical areas on agricultural lands under existing Growth Management Act (GMA) processes. Counties who opt in must designate their priority watershed, then designate a lead agency to coordinate other local entities toward developing a work plan, which identifies critical areas on agricultural lands as well as an outreach plan to offer landowners incentives to protect critical areas. These coordinated efforts will enable resources to be targeted toward the most ecologically important areas, improving the efficient application of these incentives.

The USDA offers programs to support the conservation of private forest and agricultural lands through economic incentives and market-based programs. The Conservation Reserve Enhancement Program (CREP), administered by the Farm Services Agency and the WSCC, is a voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water. The Environmental Quality Incentives Program (EQUIP) is a voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years. EQUIP provides financial assistance to help plan and implement conservation practices that address natural resource concerns and for improvements to soil, water, plant, animal, air, and related resources on agricultural land and non-industrial private forestland.

There are also a wide variety of financial incentive-based programs for private forest and agricultural landowners in Washington administered through other state agencies. For example, the Conservation Reserve Enhancement Program offered by the Farm Service Agency focuses on improving the water quality of streams that provide habitat for endangered salmon by planting trees along riparian buffers. Natural Resources Conservation Service's EQUIP provides technical assistance and funding for

conservation practices on private, non-industrial forests or agricultural land anywhere in the state.[10] The Washington Department of Fish and Wildlife (WDFW) also administers a financial incentive program for private landowners called the Landowner Incentive Program (LIP). LIP is a competitive grant program to provide financial assistance to private landowners for the protection and restoration of habitat to benefit species-at-risk on privately owned lands. Funds are a direct appropriation from Congress passed through the U.S. Fish and Wildlife Service (USFWS) to state fish and wildlife agencies in a nationally competitive process. Currently, there are no funds for LIP.

Market-based approaches will help achieve this sub-strategy. A common theme among five reports[11] addressing the preservation, conservation, and stewardship of important resource and habitat lands is consideration of ecosystem markets for farm and forest land services as a mechanism for conserving and stewarding these valuable lands at high-risk of conversion by keeping them economically viable. The Washington Conservation Markets Study, issued by the Washington Conservation Commission in response to SSB 6805 (2008), specifically evaluated the feasibility of conservation markets in Washington to pay farmers and foresters for environmental benefits from conservation projects on their land and concluded, "Private farms and forests could supply substantial conservation gains in Washington," and that, "conservation actions on private farms and forests can be a viable, sustainable and cost-effective way to achieve a wide variety of environmental goals."

Various ecosystem markets or "conservation banking" services, that are either topical or geographically limiting, are beginning to emerge in Washington, including markets for wetlands, carbon credits, biodiversity conservation, and development rights. Currently, however, these markets are uncoordinated and operate with different procedures and by various organizations – at least eight state agencies have conservation markets within their purview – and some centralized organization and management of these markets may be beneficial.

Key Ongoing Program Activities

- DNR and the Conservation Commission will continue to direct stewardship funding, consistent with current statutory and regulatory requirements, to ecologically important areas as defined by the Puget Sound Basin Ecosystem Characterization and other assessment and characterization information.
- The Conservation Commission will continue assessing existing stewardship incentive programs to identify changes to better include underserved landowners, including small farmers and owners of non-working rural lands.
- The Conservation Commission will continue working with other entities including Washington State University (WSU) Extension, Conservation Districts, and counties to improve and expand public recognition for voluntary private sector stewardship of lands.

Near-Term Actions

A3.1 NTA 1: **Use of Agriculture Conservation Program Funds. By December 2013, the Conservation Commission will enhance use of conservation and habitat restoration program funding**

[10] http://www.cfr.washington.edu/nwef/documents/ForestIncentivePrograms.pdf

[11] The Washington Conservation Markets Study (2009), issued by the Washington Conservation Commission; Washington Biodiversity Conservation Strategy, Sustaining our Natural Heritage for Future Generations, Washington Biodiversity Council, (December 2007); and Retention of High-Valued Forest Lands at Risk of Conversion to Non-Forest Uses in Washington State, College of Forest Resources, UW (March 2009); The Cascade Land Conservancy's Cascade Agenda (2005) and the Olympic Agenda (2011).

from a variety of sources, (i.e., CREP and EQUIP) that are currently underused by and not tailored for western Washington growers.

Performance measure: By August 15, 2012, the Commission will work with conservation districts to enhance the use of the Commission's Conservation Practice Data System (CDPS) for project identification. By Sept 30, 2012, 12 Puget Sound districts will enter data into the CPDS system (increase of 5 from present) and identify projects that, when implemented, will address threats to Puget Sound. By December 2013, there will be a 50 percent increase in the use of the CPDS to link projects to funding sources. By June 2013, the Commission will work with conservation districts, Ecology, federal agencies, and others to identify opportunities for improvements to agriculture conservation program funding.

A3.1 NTA 2: **Landowner Incentives for TDRs and Ecosystem Markets. Ecology and Commerce, in coordination with DNR and the State Conservation Commission, will provide technical support and fund local projects to identify and implement landowner incentives, including Transfer Development Rights (TDR)s and ecosystem services markets.**

Performance measure: Amount of technical support and local funding provided.

A3.1 NTA 3: **Forest Watershed Services. DNR will support pilot market transactions for delivery of watershed services from private forest landowners to downstream water beneficiaries in at least the Snohomish and Nisqually watersheds.**

Performance measure: Two pilot transactions completed by December 2012.

A3.2 Retain economically viable working forests and farms.

Forest lands: The key recommendation from the 2008 NW Environmental Forum on protecting Washington forests led by the UW College of Forestry is the establishment of a legislatively appointed Task Force to direct and produce an overall plan for integrating Washington's complex and various regulatory, tax, and forest land protection initiatives.

Agricultural lands: As described earlier, since 1950 we have lost more than half of the farmland in the Puget Sound region. Effectively preserving agricultural land will involve tackling a complex set of interrelated issues including real work to ensure that agriculture continues to be a viable, and vibrant, industry in Puget Sound.

Ongoing Programs

Key Ongoing Program Activity

- DNR will incorporate analysis of third-party certification standards when DNR recalculates the sustainable harvest on state trust lands in 2014.

Near-Term Actions

A3.2 NTA 1: **Working Forest Strategy. DNR will lead a collaborative process to develop a comprehensive strategy for retaining economically viable, long-term working forestlands.**

Performance measure: Initiate collaborative strategy by October 2013.

A3.2 NTA 2: **Agriculture Strategy. PSP, in collaboration with WSDA, Ecology, the Conservation Commission, and agricultural partners will develop a Puget Sound agricultural strategy by December 2013. This strategy will identify needs for maintaining the health of the industry, and key areas where the agricultural industry can contribute to the protection and restoration of Puget Sound. It will be included in the 2013 Action Agenda.**

Performance measure: Convene an advisory committee and agree on scope and approach by September 2012; convene at least 3 workshops to solicit information from agricultural partners by March 2013 (north Puget Sound, south Puget Sound, peninsula), produce a draft strategy by July 2013 for inclusion in the 2013 draft Action Agenda; review the strategy with the Action Agenda and in at least three additional workshops with agricultural partners in October 2013. Include the final agriculture strategy in the 2013 Action Agenda update.

Emerging Issues and Future Opportunities

- Assessing the ecological functions and values that can be achieved on working farms in the Puget Sound region, and the risks to these functions and values associated with conversion of farmland to non-farm uses.
- Continued development of incentive based approaches and conservation markets to conserve land and ecosystem functions while promoting the long-term sustainability of farming in the region.
- Identify and map all land within the Puget Sound basin that is currently in agricultural use to create a baseline.
- Work directly with farmers to better understand ecological and economic issues and viable solutions.

A4. Encourage compact regional growth patterns and create dense, attractive and mixed-use and transit-oriented communities

Encouraging compact urban patterns would direct development away from working farms and forestlands and protect food and fiber production, wildlife habitat, ecosystem functions and water quality. Compact development patterns reduce impervious cover that leads to run-off pollution, and decrease shoreline development that leads to erosion and habitat destruction. Finally, compact development is more energy efficient, reducing energy-related pollution including green house gas emissions.

Local Priorities

Although no local integrating organizations identified compact development as a priority sub-strategy, West Sound identifies the need to encourage infill development and within priority conservation areas to address historic and potential new development patterns, legacy lots, and redevelopment to ensure no net loss of ecosystem function

A4.1 Integrate growth, infrastructure, transportation, and conservation planning at sub-regional levels and across jurisdictions.

Regional planning alliances similar to the Puget Sound Regional Council, Thurston Regional Planning Council, or Skagit Alternative Futures could plan for growth and corresponding infrastructure needs and concurrent ecosystem protection and recovery strategies at scales that are more efficient and provide more opportunity for examining and optimizing future planning scenarios and alternatives that reduce sprawl, increase density in urban areas, and promote and plan for regional transit solutions. For example, they could tackle issues related to which jurisdictions or portions of jurisdictions are best suited to accommodate projected growth, develop regional economic development strategies which could allow for revenue sharing and minimization of competition among local governments, address inequities of tax structure that occurs with new development (e.g. fiscal zoning) and annexation issues.

The near-term action under this sub-strategy is for the Department of Commerce to develop a Soundwide program to support integrated regional planning. The program would provide funding, incentives, and assistance to local governments to create new alliances, or support existing regional alliances that undertake integrated and sophisticated regional planning to guide state, metropolitan, and local investments in ecosystem protection, land use, transportation, and housing, as well as to challenge localities to undertake zoning and land use reforms.

Incentives for participation could include expert policy institutes, training, technical assistance and additional funding, and/or extra points when applying for federal or state Puget Sound funds. The program should define desired outcomes; for example, a regional capital facilities plan, a regional economic development strategy, or regional transit solutions that encourage transit-oriented communities.

Near-Term Actions

A4.1 NTA 1: **Regional Sustainable Communities Program: Commerce will develop a Soundwide program to undertake integrated regional planning that will guide state and local investments in ecosystem protection, land use, transportation and housing, similar to the federal sustainable communities program. Draft scoping document will be completed by January 2013 for discussion with the Leadership Council to advance for decision making.**

Performance measure: Commerce will deliver a proposed program scope to Puget Sound Partnership by January 2013. Based on the scoping document and discussions with the Leadership Council, Commerce will develop additional milestones to advance the program by February 2013.

A4.2 Provide infrastructure and incentives to accommodate new and re-development within urban growth areas.

Barriers to achieving dense and vital urban centers can include various things like restrictive development regulations, environmental constraints, legacy pollution, land ownership patterns, inadequate infrastructure, lack of coordination between cities and special purpose governments, lack of urban amenities, lack of grocery stores, lack of schools, public perceptions, and fear of political risks.

Infrastructure gaps remain a hurdle to managing additional population growth, whether it is water supply, sewer treatment capacity, or transportation improvements. Beyond such functional infrastructure, investments in urban amenities and recreational facilities also can make a large difference in how cities attract additional population and private investment. Infrastructure is expensive and is a growing concern as cities address both existing and planned future development.[12]

Near-Term Actions

No near-term actions identified.

A4.3 Enhance and expand the benefits of living in compact communities.

Accommodating growth inside urban growth areas likely will require increasing density in some places. To ensure this space is actually used, we must determine how to achieve truly livable density that is attractive to families. While there are currently no near-term actions identified for this sub-strategy, it will be a critical effort to begin to better understand this issue and to work with local governments to achieve and support density in the right places.

Near-Term Actions

No near-term actions identified.

[12] Doug Peters, Commerce, Comment Letter to PSP, August 2011

Target View: Land Development

The land surrounding Puget Sound is home to several million people who live, work, and play in our region. The needs for homes, office buildings, stores, and agricultural lands to support our lives must be taken into consideration as we strive to preserve working forests and habitats, and reduce polluted runoff into streams and the Sound.

In 1990, Washington State passed the Growth Management Act (GMA), which requires local governments to comprehensively plan for the location and manner of land development. Although the GMA has been successful in addressing our growth needs, there still are many pressures to develop in our rural areas which would further affect some of our high quality remaining habitat. Watershed-based approaches to locating where development occurs within Urban Growth Areas (UGA)s and how it occurs within UGAs are essential to minimizing pressures to ecological processes, habitat structures, and ecosystem functions.

A functioning, resilient Puget Sound ecosystem includes landscapes that provide important habitat and hydrology functions and a land base to support the built environment for a growing human population. The 2020 target for land development has two parts:

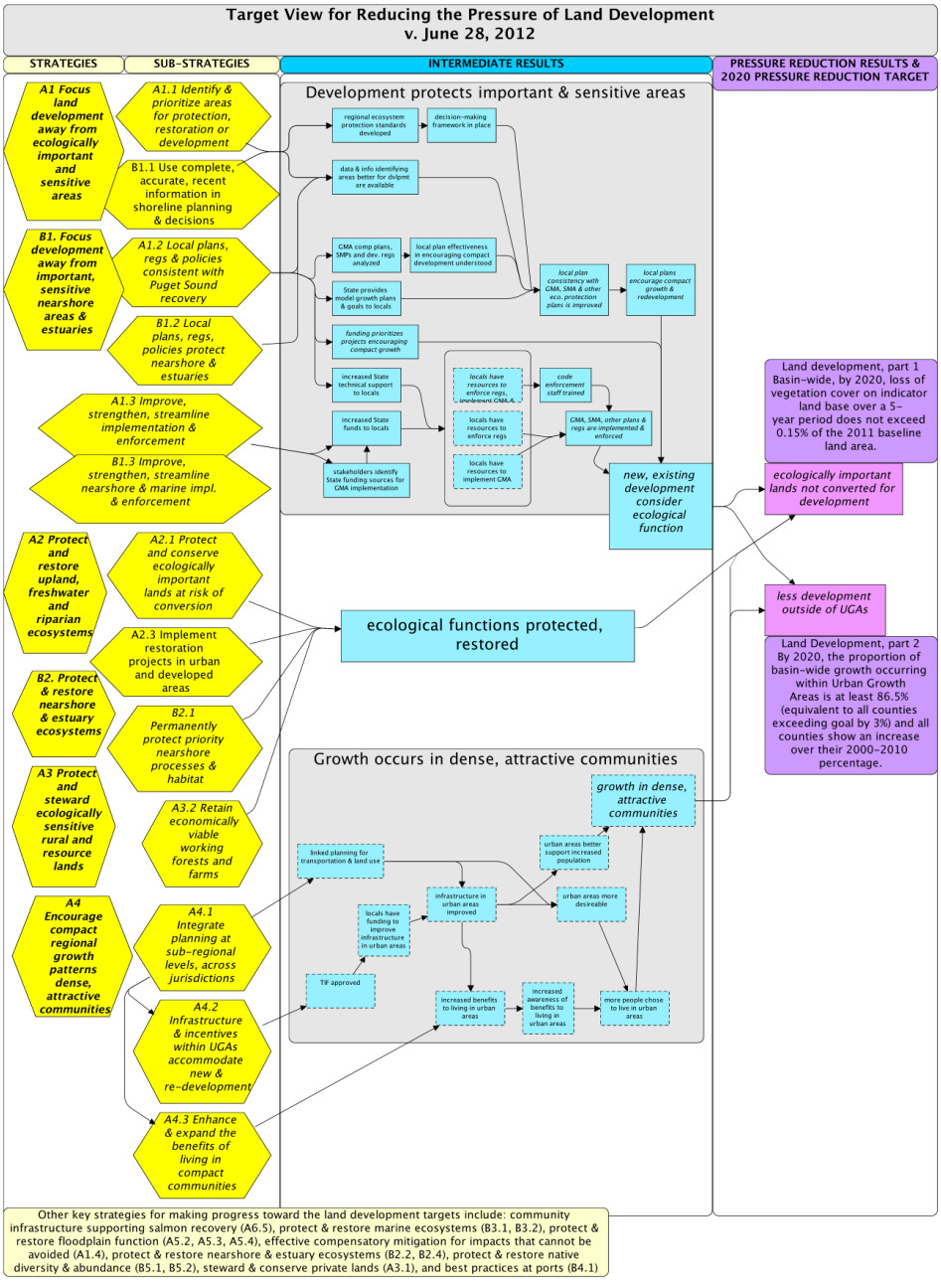
- For avoiding development of ecologically important areas:
  - Basin-wide, by 2020, loss of vegetation cover on indicator land base over a 5-year period does not exceed 0.15 percent of the 2011 baseline land area.
- For directing growth to urban growth areas:
  - By 2020, the proportion of basin-wide growth occurring within Urban Growth Areas is at least 86.5 percent (equivalent to all counties exceeding goal by 3 percent) and all counties show an increase over their 2000-2010 percentage.

There are several Action Agenda strategies related to the land development target, including:

- Protect and restore upland, freshwater, and riparian ecosystems (A2.1, A2.3)
- Encourage compact regional growth patterns and create dense, attractive and mixed-use and transit-oriented communities (A4.3, A4.1, and A4.2)
- Focus development away from ecologically important and sensitive nearshore areas and estuaries (B1.2, B1.1, B1.3)
- Protect and restore nearshore and marine ecosystems (B2.1, B2.2, B2.4)
- Maintain and enhance the community infrastructure that supports salmon recovery (A6.5)
- Protect and restore marine ecosystems (B3.2, B3.1)
- Focus land development away from ecologically important and sensitive areas (A1.3, A1.4, A1.1, A1.2)
- Protect and steward ecologically sensitive rural and resource lands (A3.2, A3.1)
- Protect and restore floodplain function (A5.3, A5.2, A5.4)
- Protect and restore native diversity and abundance of species (B5.1, B5.2)
- Use, coordinate, expand, and promote financial incentives and programs for best practices at ports and in the marine industry that are protective of ecosystem health (B4.1)

- ~~Encourage compact regional growth patterns and create dense, attractive and mixed-use and transit-oriented communities (A4.3, A4.1, and A4.2)~~
- ~~Use, coordinate, expand, and promote financial incentives and programs for best practices at ports and in the marine industry that are protective of ecosystem health (B4.1)~~
- ~~Focus land development away from ecologically important and sensitive areas (A1.2, A1.3, A1.4, A1.1)~~
- ~~Protect and restore upland, freshwater, and riparian ecosystems (A2.1, A2.3)~~
- ~~Retain economically viable working forests and farms (A3.2)~~
- ~~Focus development away from ecologically important and sensitive nearshore areas and estuaries (B1.2, B1.1, B1.3)~~
- ~~Prevent (stormwater) problems from new development at the site and subdivision scale (C2.2)~~
- ~~Implement effective management programs for groundwater (A7.3)~~

In the following results chain, or logic model, yellow polygons identify strategies and actions from the Action Agenda that we believe will contribute significantly towards meeting the target. Arrows to the blue boxes describe the intermediate results the strategies and actions are expected to achieve. The purple boxes show the reduced pressure on the ecosystem that is expected to occur, the green ovals show the areas of the ecosystem where the change will be observed, and the dark green square shows the recovery targets. See the results chain for the land cover target for a depiction of how reducing land development threats contributes to future ecosystem conditions and the Partnership's 2020 ecosystem recovery targets for land cover.


Target View for Reducing the Pressure of Land Development
v. June 28, 2012
STRATEGIES
SUB-STRATEGIES
INTERMEDIATE RESULTS
PRESSURE REDUCTION RESULTS & 2020 PRESSURE REDUCTION TARGET
A1 Focus land development away from ecologically important and sensitive areas
A1.1 Identify & prioritize areas for protection, restoration or development
B1.1 Use complete, accurate, recent information in shoreline planning & decisions
B1. Focus development away from important, sensitive nearshore areas & estuaries
A1.2 Local plans, regs & policies consistent with Puget Sound recovery
B1.2 Local plans, regs, policies protect nearshore & estuaries
A1.3 Improve, strengthen, streamline implementation & enforcement
B1.3 Improve, strengthen, streamline nearshore & marine impl. & enforcement
A2 Protect and restore upland, freshwater and riparian ecosystems
A2.1 Protect and conserve ecologically important lands at risk of conversion
A2.3 Implement restoration projects in urban and developed areas
B2. Protect & restore nearshore & estuary ecosystems
B2.1 Permanently protect priority nearshore processes & habitat
A3 Protect and steward ecologically sensitive rural and resource lands
A3.2 Retain economically viable working forests and farms
A4 Encourage compact regional growth patterns dense, attractive communities
A4.1 Integrate planning at sub-regional levels, across jurisdictions
A4.2 Infrastructure & incentives within UGAs accommodate new & re-development
A4.3 Enhance & expand the benefits of living in compact communities
Development protects important & sensitive areas
regional ecosystem protection standards developed
decision-making framework in place
data & info identifying areas better for dvlpmt are available
GMA comp plans, SMPs and dev. regs analyzed
local plan effectiveness in encouraging compact development understood
State provides model growth plans & goals to locals
local plan consistency with GMA, SMA & other eco. protection plans is improved
local plans encourage compact growth & redevelopment
funding prioritizes projects encouraging compact growth
increased State technical support to locals
locals have resources to enforce regs, implement GMA
code enforcement staff trained
increased State funds to locals
locals have resources to enforce regs
GMA, SMA, other plans & regs are implemented & enforced
stakeholders identify State funding sources for GMA implementation
locals have resources to implement GMA
new, existing development consider ecological function
ecological functions protected, restored
Growth occurs in dense, attractive communities
growth in dense, attractive communities
linked planning for transportation & land use
urban areas better support increased population
infrastructure in urban areas improved
urban areas more desireable
locals have funding to improve infrastructure in urban areas
TIF approved
increased benefits to living in urban areas
increased awareness of benefits to living in urban areas
more people chose to live in urban areas
Land development, part 1
Basin-wide, by 2020, loss of vegetation cover on indicator land base over a 5-year period does not exceed 0.15% of the 2011 baseline land area.
ecologically important lands not converted for development
less development outside of UGAs
Land Development, part 2
By 2020, the proportion of basin-wide growth occurring within Urban Growth Areas is at least 86.5% (equivalent to all counties exceeding goal by 3%) and all counties show an increase over their 2000-2010 percentage.
Other key strategies for making progress toward the land development targets include: community infrastructure supporting salmon recovery (A6.5), protect & restore marine ecosystems (B3.1, B3.2), protect & restore floodplain function (A5.2, A5.3, A5.4), effective compensatory mitigation for impacts that cannot be avoided (A1.4), protect & restore nearshore & estuary ecosystems (B2.2, B2.4), protect & restore native diversity & abundance (B5.1, B5.2), steward & conserve private lands (A3.1), and best practices at ports (B4.1)

Target View: Land Cover

Land cover is an essential indicator of ecosystem health because of its importance for both terrestrial and aquatic ecosystem processes and habitats. During the past 50 years, Puget Sound lost at least two-thirds of its remaining old growth forest, more than 90 percent of its native prairies, and 80 percent of its saltwater and freshwater marshes. From 1992-2006, approximately 60,000 acres of forest-covered lands were converted to developed land.

A functioning, resilient ecosystem includes a mosaic of forestlands, agricultural lands, open space, natural lands (i.e., forest, prairie), and developed lands and related infrastructure to support habitat needs, support natural processes, and generate ecosystem services.

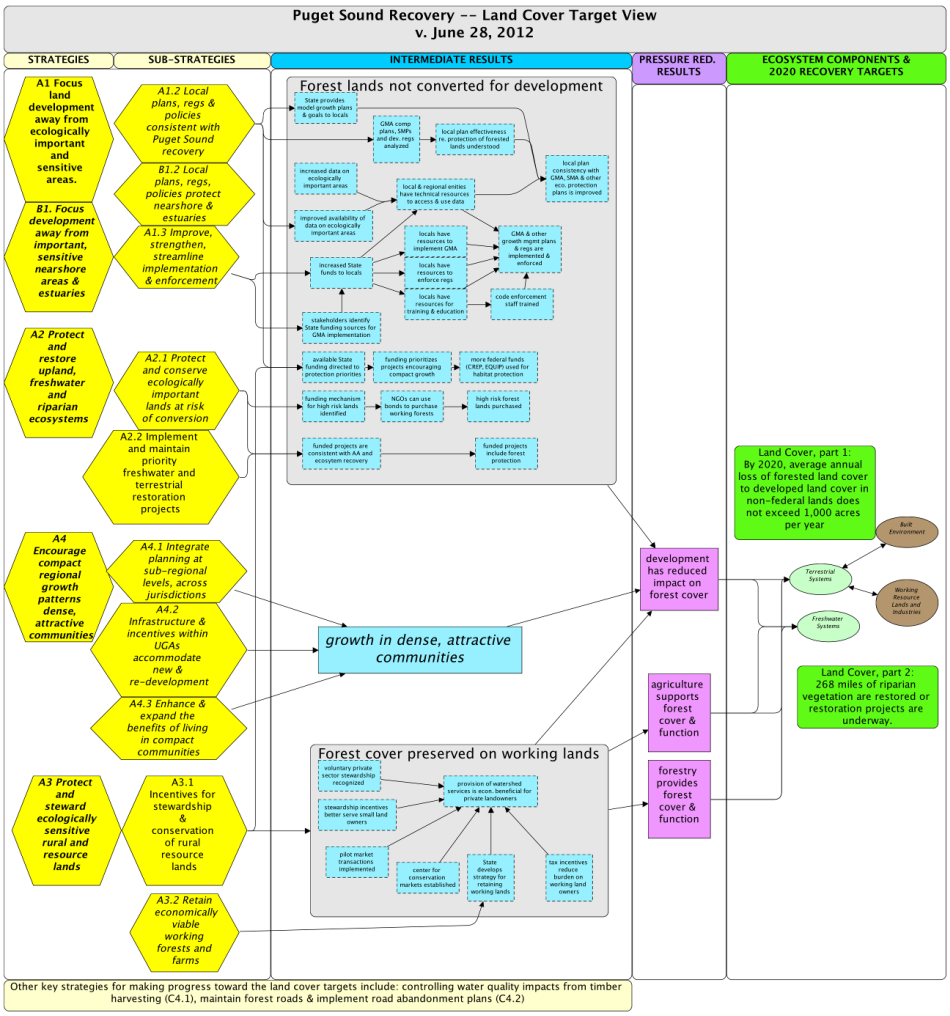
The 2020 recovery target for land cover in forested lands and riparian areas is:

- average annual loss of forested land cover to developed land-cover in non-federal lands does not exceed 1,000 acres per year and 268 miles of riparian vegetation are restored or restoration projects are underway.

There are several Action Agenda strategies related to the land cover targets:

- Focus land development away from ecologically important and sensitive areas (A1.3, A1.2)
- Protect and restore upland, freshwater and riparian ecosystems (A2.1, A2.2)
- Encourage compact regional growth patterns and create dense, attractive and mixed-use and transit-oriented communities (A4.2, A4.3, A4.1)
- Manage surface runoff from forest lands (C4.1, C4.2)
- Protect and steward ecologically sensitive rural and resource lands (A3.1, A3.2)
- Focus land development away from ecologically important and sensitive nearshore areas and estuaries (B1.2)

In the following results chain, or logic model, yellow polygons identify strategies and actions from the Action Agenda that we believe will contribute significantly towards meeting the target. Arrows to the blue boxes describe the intermediate results the strategies and actions are expected to achieve. The purple boxes show the reduced pressure on the ecosystem that is expected to occur, the green ovals show the areas of the ecosystem where the change will be observed, and the dark green square shows the recovery targets.


Puget Sound Recovery -- Land Cover Target View
v. June 28, 2012
STRATEGIES
SUB-STRATEGIES
INTERMEDIATE RESULTS
PRESSURE RED. RESULTS
ECOSYSTEM COMPONENTS & 2020 RECOVERY TARGETS
A1 Focus land development away from ecologically important and sensitive areas.
B1. Focus development away from important, sensitive nearshore areas & estuaries
A2 Protect and restore upland, freshwater and riparian ecosystems
A4 Encourage compact regional growth patterns dense, attractive communities
A3 Protect and steward ecologically sensitive rural and resource lands
A1.2 Local plans, regs & policies consistent with Puget Sound recovery
B1.2 Local plans, regs, policies protect nearshore & estuaries
A1.3 Improve, strengthen, streamline implementation & enforcement
A2.1 Protect and conserve ecologically important lands at risk of conversion
A2.2 Implement and maintain priority freshwater and terrestrial restoration projects
A4.1 Integrate planning at sub-regional levels, across jurisdictions
A4.2 Infrastructure & incentives within UGAs accommodate new & re-development
A4.3 Enhance & expand the benefits of living in compact communities
A3.1 Incentives for stewardship & conservation of rural resource lands
A3.2 Retain economically viable working forests and farms
Forest lands not converted for development
State provides model growth plans & goals to locals
GMA comp plans, SMPs and dev. regs analyzed
local plan effectiveness re. protection of forested lands understood
local plan consistency with GMA, SMA & other eco. protection plans is improved
increased data on ecologically important areas
local & regional entities have technical resources to access & use data
improved availability of data on ecologically important areas
increased State funds to locals
locals have resources to implement GMA
locals have resources to enforce regs
locals have resources for training & education
GMA & other growth mgmt plans & regs are implemented & enforced
code enforcement staff trained
stakeholders identify State funding sources for GMA implementation
available State funding directed to protection priorities
funding prioritizes projects encouraging compact growth
more federal funds (CREP, EQIP) used for habitat protection
funding mechanism for high risk lands identified
NGOs can use bonds to purchase working forests
high risk forest lands purchased
funded projects are consistent with AA and ecosystem recovery
funded projects include forest protection
growth in dense, attractive communities
Forest cover preserved on working lands
voluntary private sector stewardship recognized
stewardship incentives better serve small land owners
provision of watershed services is econ. beneficial for private landowners
pilot market transactions implemented
center for conservation markets established
State develops strategy for retaining working lands
tax incentives reduce burden on working land owners
development has reduced impact on forest cover
agriculture supports forest cover & function
forestry provides forest cover & function
Land Cover, part 1: By 2020, average annual loss of forested land cover to developed land cover in non-federal lands does not exceed 1,000 acres per year
Land Cover, part 2: 268 miles of riparian vegetation are restored or restoration projects are underway.
Built Environment
Terrestrial Systems
Working Resource Lands and Industries
Freshwater Systems
Other key strategies for making progress toward the land cover targets include: controlling water quality impacts from timber harvesting (C4.1), maintain forest roads & implement road abandonment plans (C4.2)

Protect and Restore Floodplain Function

The Challenge

Floodplains play a vital, often unrecognized role in the health of the Puget Sound ecosystems and watersheds. Floodplains support a variety of key ecological functions: They slow and store flood waters, filter our water, generate economically and culturally valuable fisheries, produce fertile soils for farming, recharge our aquifers, create a variety of recreational opportunities, and provide critical habitat and sustenance for a diverse array of terrestrial and aquatic life. Floodplains are one of the most productive ecosystems in Puget Sound, yet they are also one of the most degraded portions of the Puget Sound ecosystem, and these impacts have significant consequences for people and nature. Several factors have impeded floodplain recovery (and related salmon recovery and water quality goals) to date. These factors include a lack of public support, high costs associated with restoration, and the existence of divergent and uncoordinated agency goals. Despite the tens of millions of dollars spent on ecosystem recovery and flood risk reduction, habitat remains in decline and flood risks continue to mount.

Local, state, and federal agencies employ a variety of programs to address floodplain management issues – sometimes in contradictory ways. Flood risk reduction projects developed in ways that don't take fish and wildlife needs into account get caught up in ESA conflicts that prevent or delay construction and add mitigation costs. Habitat restoration projects developed as single-purpose projects are opposed by communities concerned with maintaining farmland or water management infrastructure. Progress on both sides has been too slow and arguably outweighed by the increased costs associated with continued development. The net result has been a continued decline of ecosystem functions and increase in human flood risks. Yet divergent floodplain management goals – flood hazard mitigation, clean water, salmon – are not inherently at odds with one another. Those portions of the river corridor that present the greatest risks to people (i.e., incur the most flooding and erosion) are often the same areas where salmon habitat, water filtering wetlands, groundwater recharge and flood storage are most likely to occur.

Climate Change

As identified in *Preparing for Climate Change: Washington State's Integrated Climate Response Strategy* (April 2012), flood frequency is projected to increase progressively from the 2020s through the 2080s, with the largest increases predicted for mixed rain-snow runoff basins located in Puget Sound. Flooding can cause widespread damage to communities and property.

The state response strategy identified several high priority, overarching strategies related to floodplain protection and restoration. These include:

- Protecting people and communities from climate change impacts
- Reducing the risk of damage to buildings, transportation systems, and other infrastructure. This strategy specifically calls for reducing flood damage by restoring floodplains and capturing more water
- Safeguarding fish and wildlife and protecting critical ecosystem services that support human and natural systems
- Reducing the vulnerability of coastal communities, habitat, and species
- Supporting the efforts of local communities and strengthened capacity to respond and engage the public

The sub-strategies and actions in the Action Agenda call for protection and reconnection of floodplains. Specific actions related to climate change are included.

To protect and restore floodplains in Puget Sound and address the issues described above, this section outlines a series of four comprehensive sub-strategies. Throughout these sub-strategies, two predominant themes are (1) floodplains provide myriad functions and services that both benefit and create risks to society, and (2) only through recognizing these services and risks and managing them in a holistic, coordinated fashion will we break through the status quo and put the region on a path to making people safer and the Puget Sound ecosystem healthier (i.e., achieving both the ecosystem and human well being targets that must be a part of Puget Sound Recovery).

Relationship to Recovery Targets

The Partnership defines a functioning, resilient ecosystem to include freshwater floodplains that support natural processes and deliver ecological services to keep people and property safe during flood flows, support fisheries production, and provide water filtration and ground water recharge.[13] The Partnership's Leadership Council set two recovery targets for floodplains in the Puget Sound that it aims to achieve by 2020:

- 15 percent of degraded floodplain areas are restored or floodplain projects to achieve that outcome are underway across Puget Sound
- No additional loss of floodplain function in any Puget Sound watershed relative to a 2011 baseline

Given their vital role in maintaining the health and functioning of the Puget Sound, it is important that intact floodplains be protected and that floodplain areas that have been developed are restored or are managed in a way to recapture as much of the affected functions as possible. The strategies in this section are designed to help achieve the targets.

[13] Leadership Council Resolution 2011-13, "Adopting a 2020 ecosystem recovery target for floodplains" Available at: http://www.psp.wa.gov/downloads/LC_Resolutions/Resolution_2011-13.pdf

Local Priorities

Several local areas prioritized protection and restoration of floodplains.

Local Integrating Organization	Priorities
South Central	*Top Priority* • Restore floodplains to recreate ecosystem function
South Puget Sound	*Strategic Initiative: Salmon Recovery/Habitat Restoration* • Reconfigure I-5 through the Nisqually lowlands to reconnect the flood plain throughout the valley
Hood Canal	*From General priority list* • Restore floodplains and channel migration zones
Stillaguamish and Snohomish Watersheds, Skagit Watershed	The Stillaguamish, Snohomish and Skagit river systems are significant in Puget Sound. Floodplain protection and restoration strategies are under discussion.

A5. Protect and restore floodplain function

A5.1 Improve data and information to accelerate floodplain protection, restoration, and flood hazard management.[14]

Complete and up-to-date information is foundational to achieving floodplain recovery. All the sub-strategies and NTAs associated with floodplain protection and recovery assume that decision makers have access to reliable data on floodplain locations, conditions, and recovery priorities.

Near-Term Actions

A5.1 NTA 1: **Floodplain Protection and Policy Team Actions.** **PSP will advance floodplain protection and restoration by facilitating actions, policy changes, and program changes necessary to reduce critical barriers to habitat protection and restoration. Funding will be focused on the places that have the greatest potential to recover floodplain functions.** ~~**PSP will advance floodplain protection and restoration by facilitating actions, policy changes, and program changes necessary to meet the floodplain recovery target by June 2013.**~~

Performance Metric: By December 2012, PSP convenes a Puget Sound Floodplain Protection and Recovery Policy Team to establish a working definition of 'floodplain' and 'floodplain function' in the context of the 2020 floodplains recovery target; By December 2012, work with local levee owners to identify the barriers to implementing levee setbacks and habitat friendly levee management practices and work with key parties to address barriers; By June 2013, identify the policy and program changes of federal, state and local flood risk management, flood mitigation and ecosystem protection and restoration programs to foster multi-objective floodplain management.

[14] During the comment period, some commenters recommended combining sub-strategies A5.1 and A5.2; these changes were not made at this time but will be considered in future Action Agenda updates.

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By June 2013, identify floodplain areas; prioritize those most important for protection, restoration, farmland preservation or other compatible and non-compatible uses; and identify the implementation steps needed to protect functioning floodplain areas. By June 2013, draft an action plan to address the programs and target programmatic recommendations for legislative change, rule amendments, and administrative changes, needed to achieve the floodplains pressure reduction target using the results in the July 2010 "Floodplain Management: A Synthesis of Issues Affecting Recovery of Puget Sound" report and other relevant and timely information.

A5.2 Align policies, regulations, planning, and agency coordination to support multi-benefit floodplain management, incorporating climate change forecasts.

Floodplain management policies have been developed over many decades. Some of these policies conflict with Puget Sound recovery goals and present obstacles to achieving the floodplain restoration target. Flood risk management and ecosystem recovery are not mutually exclusive goals yet have been historically pursued independent of one another.

One of the principle challenges to achieving the 15 percent restoration goal is the sheer cost involved in floodplain restoration projects, most of which will involve expensive infrastructure work. Asking agencies to coordinate their programs to pool funding and achieve greater efficiencies is easy in theory; however, agencies are required to use cost-benefit analyses focused specifically on their programmatic mandate when making decisions about which projects or activities to fund. Developing a more holistic approach to cost-benefit analysis that speaks to multiple agency goals will be critical to enabling a coordinated, multi-agency approach to funding floodplain projects that will make people safer and our ecosystem healthier. Creating a decision making framework that enables agencies to identify projects that meet multiple program goals is a critical step toward being able to coordinate floodplain investments and finance floodplain recovery projects.

Projected changes in weather patterns are expected to cause an increase in the frequency and magnitude of flooding, increased sediment delivery to our rivers, and a rise in the Puget Sound sea level. These changes have significant implications for infrastructure and other land uses in floodplains and near-shore environments. Restoring floodplain functions can help mitigate this impact while creating more resilient communities. At the same time, our floodplain ecosystems will need to adapt to these changing conditions. Incorporating climate change forecasts into floodplain management strategies implies having a deeper understanding of what the potential is for localized impact to climate change, identifying how these impacts can be accounted for in existing planning processes, and most importantly appropriately reflecting the value of floodplain protection and restoration into decision making. The strategies delineated in this section represent the long-term solution and the NTAs represent only the beginning of a much longer conversation needed to identify the full set of needed actions.

SALMON RECOVERY

Protecting and Restoring Floodplains – A Salmon Recovery Plan Priority: Functioning floodplains are critically important for salmon across the Puget Sound and need to be protected and restored. Specific floodplain protection and restoration areas are identified for all the mainstem, natal, watersheds in Volume II. Two key issues that have come out of salmon recovery but are relevant to the greater recovery effort are the Biological Opinion (BiOp) issued by NOAA/NMFS on FEMA's National Floodplain Insurance Program (NFIP) and the Army Corps of Engineers Levee Vegetation Management Standards.

- NMFS BiOp on FEMA NFIP: BiOp indicated that the development that has been allowed in the floodplains across the Puget Sound has acted as a 'take' of salmon and orcas. This BiOp is an important document in the information related to the need to protect and restore floodplain habitat.
- Levee Vegetation: the allowable amount and size of vegetation along Corps certified levees impacts the riparian habitat for many critical salmon-bearing streams and rivers. Opportunities may exist to increase riparian vegetation, consistent with Corps of Engineer levee maintenance standards (or variances to these standards with the approval of levee owners). Work has been done to reinforce the Seattle variance but more work is needed to ensure this can be used.

How are these priorities integrated: The Action Agenda strategies and actions generally reflect the themes and actions identified in the original salmon recovery plan through the need to protect and restore floodplains into functioning ecosystems. As all Chinook salmon populations need to get to a low risk status, prioritization of floodplain areas for protection, restoration and farmland protection should be considered a sequencing question. In addition, identification of these areas should consider those already important for salmon in the Salmon Recovery Plans. Finally, prioritization efforts should not slow down the existing work to protect and restore floodplain areas known as important per the Salmon Recovery Plan.

As with the integration of working lands priorities, consideration about the flexibility of conservation tools may need to be more clearly articulated. The watershed chapters have specific information about where floodplain restoration gains could be made.

Ongoing Programs

Key Ongoing Program Activity

- In coordination with the Corps of Engineers and local levee owners, PSP is currently leading the development of new regional levee-based vegetation standards; the standards are expected to be complete by 2012. The standards will need to be evaluated by the Corps and other federal agencies to determine if it supports recovery. PSP will work to change the federal policy or, failing that, to use the framework as a state guideline to encourage local governments to pursue an alternative approach.

Near-Term Actions

None – work in the near term will focus on implementation of ongoing programs

A5.3 Protect and maintain intact and functional floodplains.

In Puget Sound, protection of the remaining intact habitat functions of floodplains and restoration of lost functions is noted as a high priority in many listed species recovery plans and the Action Agenda calls for several near-term actions supporting these outcomes. Most of the intact and functional floodplains are in undeveloped areas. The focus of this sub-strategy is on ecosystem-level programmatic actions that contribute to maintaining and protecting floodplains. It is also important to note that in parallel to the protection and restoration of floodplains, there needs to be an effort to change the demand for development in dense/Urban Growth Areas (UGAs).

The Federal Emergency Management Agency (FEMA) implements the National Flood Insurance Program (NFIP). NFIP issues flood insurance to homeowners and greatly influences the type and extent of development in floodplains. In late 2008, the National Marine Fisheries Service (NMFS) issued a Biological Opinion (BiOp) finding that the NFIP jeopardizes the existence of several Puget Sound species listed under the Endangered Species Act (ESA). NMFS has identified seven actions for FEMA that would bring the NFIP into compliance with the ESA, the third of which calls for FEMA to modify its implementation of the NFIP minimum criteria to prevent and/or minimize the degradation of channel and floodplain habitat. NMFS set a deadline of September 22, 2011 for work by FEMA and 122 communities in Puget Sound to implement this action.[15] The BiOp and the work it outlines for FEMA and Puget Sound communities is a critical component in achieving the floodplain recovery target.

Ongoing Programs

FEMA and NOAA technical assistance teams are currently working with other local, state and federal governments to implement the BiOp and provide tools and mechanisms to promote consistency with other regulations by 1Q 2012, and on an ongoing basis as needed. A performance metric is the number of NFIP communities with BiOp compliance packages approved by FEMA.

Key Ongoing Program Activities

- DNR, WDFW, and other state agencies, tribes, local governments, and non-governmental entities use applicable federal and state grants, local government funds, and private funds to purchase development rights from working forest and farm landowners for lands at risk of conversion in key Puget Sound watersheds.

[15] http://www.psp.wa.gov/downloads/LC2010/111910/05e_FEMA_BiOP_Memo.pdf

Near-Term Actions

A5.3 NTA 1: **FEMA Annual Reporting for NFIP BiOp. By 2012, FEMA will complete augmented annual reporting requirements relative to the obligations of the 122 communities in Puget Sound to abide by the NMFS NFIP BiOp, including policy sufficiency, implementation effectiveness, and on-the-ground implementation effectiveness.**

Performance measure: (status of FEMA reporting requirements) By 2012, FEMA reporting requirements are complete.

A5.3 NTA 2: **CAO Updates on Frequently Flooded Areas. By 2013, Ecology, Commerce, and other interested state agencies will develop a strategy for and lead effective state engagement with local governments in the next round of CAO updates on frequently flooded areas.**

Performance measure: By 2013, strategy is complete

A5.3 NTA 3: **BiOp Compliance and Floodplain Target. By 2013, PSP will evaluate how BiOp compliance contributes to achieving the Floodplains target by December 2013. This includes policy analysis of jurisdictional compliance, development that has occurred since the BiOp, and recommendations for next steps.**

Performance measure: By 2013, evaluation is complete.

A5.3 NTA 4: **PSP will continue to work with the Army Corps of Engineers to craft a regional variance to their vegetation on levees policy.**

Performance measure: By June 2013, new language for regional variance developed and adopted.

Comment [KG3]: New NTA from Habitat SI subcommittee

A5.4 Implement and maintain priority floodplain restoration projects.

The target identified for Puget Sound recovery calls for a 15 percent restoration of floodplains. This is an ambitious goal, but, because of the importance of floodplains to overall Puget Sound recovery, an absolutely critical one. Achieving it will require overcoming key barriers in order to deliver the necessary (1) public support, (2) funding, and (3) interagency coordination. It will take significant commitment and collaboration from agencies and a new approach that aligns flood risk management efforts and programs so that the necessary support and funding is garnered to accelerate recovery actions.

Floodplain forested lands are critically important habitat and provide several indispensible ecosystem services. The ecosystem services include rainfall diversion and storage to stem the flow of water to reduce downstream flood damage; surface water quality protection; groundwater recharge; and mitigation of erosion and sedimentation deposit.

The production of arable soils is one of the most valuable ecosystem services society gets from floodplains. The result is that the majority of farmland in Puget Sound is located in floodplains because

of the rich, fertile soil. However, agricultural land use can significantly alter the functionality of floodplains. In their rating of existing floodplain function in Puget Sound, the NMFS found that agriculture-dominated water resource inventory areas (25 percent or greater agricultural use) had "poor" or "poor-fair" conditions.[16] Farmers also experience the direct social and economic costs of floods when they occur. As we look to the future there is an opportunity to change agricultural management practices to make it more compatible with recovering floodplain functions.

It is important to locate new and replacement public infrastructure (e.g., bridges, roads, rails, treatment plants) outside of floodplains and ensure that the design of new or replacement infrastructure optimizes and enhances floodplain function. Repairs to infrastructure that cannot be relocated should be the least disruptive of floodplain function as possible.

Ongoing Programs

There are several grant programs and other finance mechanisms that create incentives for protection, enhancement, or restoration of floodplain function on forest and agricultural lands, some of which are listed below.

The **Family Forest Fish Passage Program** (FFFPP) is a cost-share program that helps small forest landowners renovate barriers on their land to allow fish passage in small waterways. Artificial barriers in streams can prevent many fish from reaching miles of upstream habitat, and can be devastating to species such as salmon. As a public resource, fish are protected by state Forest Practice Rules which require landowners to restructure fish barriers by 2016 in a way that allows unobstructed fish passage. The program provides 75–100 percent of the cost of removing the barrier, with the funding provided varying based on the quality of the habitat, number of salmon and trout species benefiting from the correction, and project cost. This program allows working forest lands to remain viable while supporting ecosystem function.

The **Forestry Riparian Easement Program** (FREP) compensates eligible owners of small forest lands in exchange for a 50-year conservation easement on qualifying timber. Landowners agree to leave timber unharvested during the easement period, while still maintaining property rights and full access. The riparian benefits of the forested lands are maintained by the state. This program allows landowners to benefit from helping to preserve local waterways, thereby improving rural communities while helping to restore flood protection in these areas.

The **Aquatic Lands Enhancement Account** (ALEA) program is targeted at re-establishing the natural, self-sustaining ecological functions of the waterfront, providing or restoring public access to the water, and increasing public awareness of aquatic lands as a finite natural resource and irreplaceable public heritage. Typical projects include removing bulkheads to restore natural beach function, restoring estuaries, and restoring shoreline for salmon habitat. Funded by revenue generated from DNR's management of state-owned aquatic lands, these grants are available to local agencies, state agencies, and Native American tribes.

The **Land and Water Conservation Fund** (LWCF) provides funding to preserve and develop outdoor recreation resources, including parks, trails, and wildlife lands. Project goals typically involve protecting

[16] Smith, C.J. 2005. Salmon Habitat Limiting Factors in Washington State. Prepared for the Washington State Conservation Commission, Olympia, Washington. In http://www.psp.wa.gov/downloads/LC2010/072010/03b_Floodplain_Management_Report%20Judge%20Final-July%202010.pdf

wildlife habitat or renovating parks. Funded by revenue from federal sales and leasing of off-shore oil and gas resources, these funds are available to local agencies, park and recreation districts, school districts, special-purpose districts, state agencies, and Native American tribes.

The **Salmon Recovery Funding Board** (SRFB) funds riparian, freshwater, estuarine, near-shore, saltwater, and upland projects that protect existing, high quality habitats for salmon. It also funds projects to restore degraded habitat to increase overall habitat health and biological productivity of the fish. Funds come from the sale of state general obligation bonds and federal Pacific Coastal Salmon Recovery Funds (PCSRF). These funds are available to state and local agencies, conservation districts, Native American tribes, non-profit organizations, private landowners, regional fisheries enhancement groups, and special purpose districts.

The **Estuary and Salmon Restoration Program** (ESRP) provides grants to protect and restore the Puget Sound near-shore. The program was created by WDFW to support the emerging priorities of the Puget Sound Nearshore Ecosystem Restoration Program. Typical projects include protection of nearshore and wetland habitat, restoration of salmon habitat and estuaries, and removal of bulkheads. Funding comes from the State Building Construction Fund. Federal funding also has been received from the NOAA's Community Based Restoration Program and USFWS. Federal funding for projects in Puget Sound is expected from EPA. Funds are available to local, state and federal agencies, Native American tribes, academic institutions, private institutions and non-profit organizations.

The **Wetlands Reserve Program (WRP)** provides grants to assist eligible applicants in the restoration, creation, protection and enhancement of wetlands on their property through a voluntary, environmentally safe and cost effective manner. The WRP is administered by the Natural Resources Conservation Service (NRCS) through consultation with the State Technical Committee. In addition to WRP, the NRCS has several other conservation programs that help reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters.[17]

Puget Sound Acquisition and Restoration (PSAR) funds were requested by the Governor as part of her initiative to protect and restore Puget Sound by 2020 to accelerate implementation of the Puget Sound Salmon Recovery Plan. Funding has been provided by the legislature through the capital budget to protect and restore habitat in Puget Sound with a focus on acquiring and protecting critical habitat and restoring habitat function. These funds are available to state and local agencies, conservation districts, Native American tribes, non-profit organizations, private landowners, regional fisheries enhancement groups, and special purpose districts. In 2011, the program was revised to prohibit state agencies from using PSAR funds to acquire land.

Key Ongoing Program Activities

- ~~DNR, WDFW, and other state agencies, tribes, local governments, and non-governmental entities use applicable federal and state grants, local government funds, and private funds to purchase development rights from working forest and farm landowners for lands at risk of conversion in key Puget Sound watersheds.~~
- RCO, PSP, and Puget Sound lead entities with local and regional partners implement relevant habitat restoration projects identified in Salmon Recovery 3-year work plans (see Section A6).

[17] NRCS programs: http://www.wa.nrcs.usda.gov/programs/index.html

- Snohomish Sustainable Lands Strategy and Skagit Tidegate Initiative are multi-benefit approaches that enable agricultural infrastructure improvements and/or provide regulatory certainty in exchange for restoration actions.

Near-Term Actions

A5.4 NTA 1: **Prioritization of State Highways with Floodplain Impacts. WSDOT will identify and prioritize the state highway facilities (approximately 500 structures and 185 miles of highway) that have the biggest impacts on floodplain function and connectivity, including consideration of WSDOTs 2011 Climate Impacts Vulnerability Assessment Report, by December 2014 (or 18 months after funding is obtained)**

Performance measure: By June 2013, obtain funding for the analysis. Complete the analysis and present the results to the Ecosystem Coordination Board and Leadership Council by December 2014. By February 2015, identify future actions and performance measures for integrating the prioritization work into the WSDOT decision-making process for repair and replacement projects.

A5.4 NTA 2: **Ag Land Ecosystem Services Markets. By December 2013, the State Conservation Commission, working with Conservation Districts and Watershed Groups and counties will have three pilot projects underway that demonstrate ecosystem services markets associated with flood hazard prevention and agricultural lands in floodplains.**

Performance measure: By November 2012, WSCC will have convened discussions and identified candidate areas; By December 2013, three pilot projects demonstrating ecosystem service markets for floodplains are in place.

A5.4 NTA 3: **Candidate Areas for Land Swaps. The State Conservation Commission will work with conservation districts, agricultural community, watershed planning groups, and local jurisdictions to use the outputs from the characterization work (A5.1 NTA 1) to identify potential land swaps (i.e., county land use and conservation districts) and identify candidate areas available to expand for agriculture outside of priority floodplain areas by June 2013.**

Performance measure: By December 2012, the Commission will convene interested parties in at least two organizing meetings to identify candidate areas. By June 2013, potential land swaps will be identified in five candidate areas available to expand for agriculture.

Emerging Issues and Future Opportunities

- The Floodplain Protection and Policy Team could tackle additional key items such as:
    - Develop a decision making framework that enables agencies to identify cross-agency floodplain project priorities based on their ability to meet multiple goals and delineates a coordinated funding approach, including cost-share mechanisms, for floodplain-friendly modifications to flood protection infrastructure in a cost-effective manner.

    - Identify federal, state, local, and private funding to develop case studies that are illustrative of the benefits of a multi-objective approach to floodplain restoration and implement a pilot program to fund projects that leverage the work of the case studies.
    - Assess the disincentives for reestablishing habitat land on agricultural lands.
- Support changes to state comprehensive flood management planning and project funding policies to ensure that plans and projects supported with state funding fully incorporate projected changes to sea level rise, flood frequency and volumes, sediment regimes and other issues that could be a major threat to human safety and floodplain ecosystem health.

Target View: Floodplains

A functioning, resilient ecosystem requires freshwater floodplains that support natural processes and deliver ecological services to keep people and property safe during flood flows, support fisheries production, and provide water filtration and groundwater recharge. Floodplains are lush regions that provide food and fresh water, as well as good agricultural land through soil and habitat formation. We also know that improving riverside and floodplain habitat is a key part of virtually all recovery plans for salmon.

Unfortunately, many floodplains in Puget Sound have been lost through a combination of shoreline armoring and levees, as well as residential, commercial, industrial and agricultural development. Better management of floodplains is essential for recovering salmon and Puget Sound.

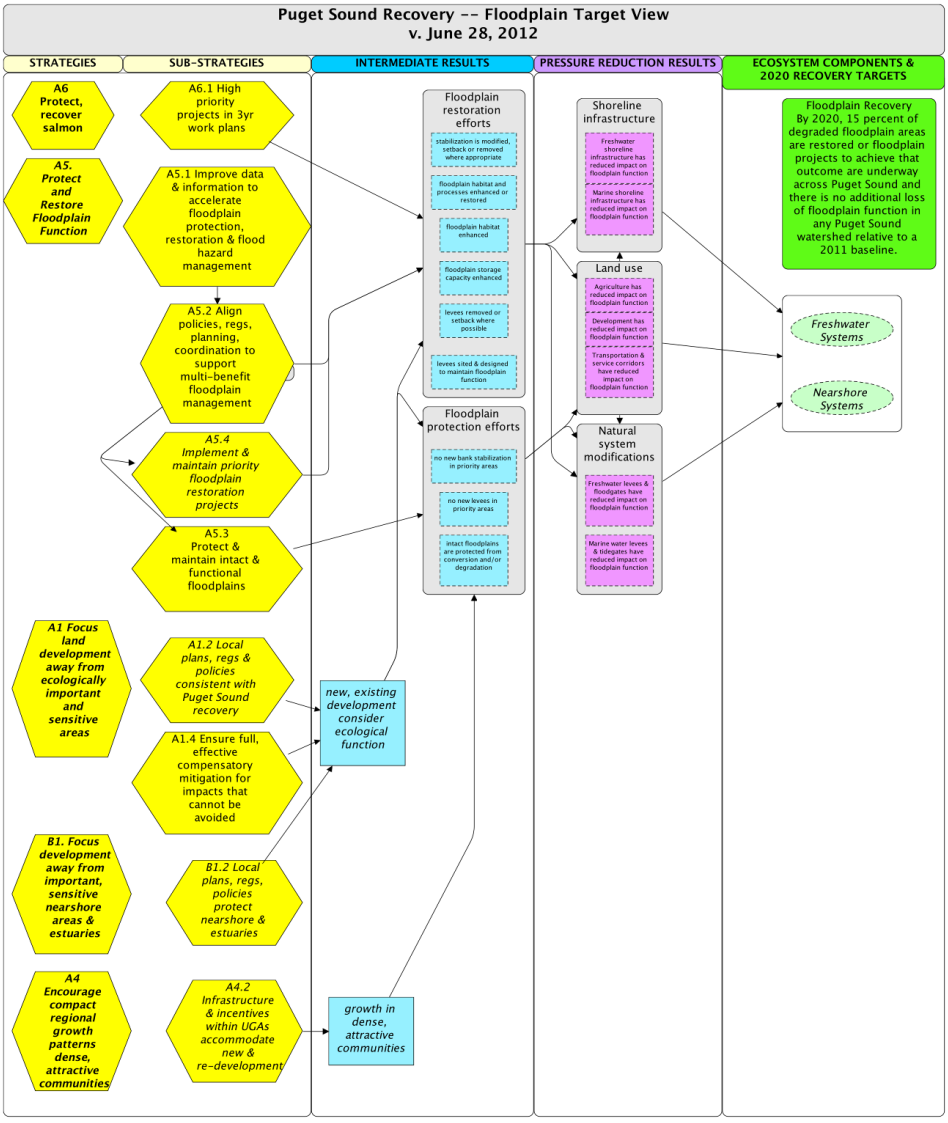
The 2020 target for floodplains is:

1. Restore, or have projects underway to restore, 15 percent of Puget Sound floodplain area.
2. Have no net loss of floodplain function, in any watershed (for example, due to conversion for development).

The Action Agenda strategies most related to achieving the recovery target for floodplains are:

- Improve data and information to accelerate floodplain protection, restoration, and flood hazard management (A5.1)
- Align policies, regulations, planning, and agency coordination to support multi-benefit floodplain management, incorporating climate change forecasts (A5.2)
- Protect and maintain intact and functional floodplains (A5.3)
- Implement and maintain priority floodplain restoration projects (A5.4)
- Provide infrastructure and incentives to accommodate new and re-development within urban growth areas (A4.2)
- Focus land development away from ecologically important and sensitive areas (A1.2, A1.4)
- Focus land development away from ecologically important and sensitive nearshore areas and estuaries (B1.2)
- Implement high priority projects identified in each salmon recovery watershed's 3 year work plan (A6.1)

In the following results chain, or logic model, yellow polygons identify strategies and sub-strategies from the Action Agenda that we believe will contribute significantly towards meeting the target. Arrows to the blue boxes describe the intermediate results the strategies and actions are expected to achieve. The purple boxes show the reduced pressure on the ecosystem that is expected to occur, the green ovals show the areas of the ecosystem where the change will be observed, and the dark green square shows the recovery targets.


Puget Sound Recovery -- Floodplain Target View
v. June 28, 2012
STRATEGIES
SUB-STRATEGIES
INTERMEDIATE RESULTS
PRESSURE REDUCTION RESULTS
ECOSYSTEM COMPONENTS & 2020 RECOVERY TARGETS
A6 Protect, recover salmon
A5. Protect and Restore Floodplain Function
A1 Focus land development away from ecologically important and sensitive areas
B1. Focus development away from important, sensitive nearshore areas & estuaries
A4 Encourage compact regional growth patterns dense, attractive communities
A6.1 High priority projects in 3yr work plans
A5.1 Improve data & information to accelerate floodplain protection, restoration & flood hazard management
A5.2 Align policies, regs, planning, coordination to support multi-benefit floodplain management
A5.4 Implement & maintain priority floodplain restoration projects
A5.3 Protect & maintain intact & functional floodplains
A1.2 Local plans, regs & policies consistent with Puget Sound recovery
A1.4 Ensure full, effective compensatory mitigation for impacts that cannot be avoided
B1.2 Local plans, regs, policies protect nearshore & estuaries
A4.2 Infrastructure & incentives within UGAs accommodate new & re-development
new, existing development consider ecological function
growth in dense, attractive communities
Floodplain restoration efforts
stabilization is modified, setback or removed where appropriate
floodplain habitat and processes enhanced or restored
floodplain habitat enhanced
floodplain storage capacity enhanced
levees removed or setback where possible
levees sited & designed to maintain floodplain function
Floodplain protection efforts
no new bank stabilization in priority areas
no new levees in priority areas
intact floodplains are protected from conversion and/or degradation
Shoreline infrastructure
Freshwater shoreline infrastructure has reduced impact on floodplain function
Marine shoreline infrastructure has reduced impact on floodplain function
Land use
Agriculture has reduced impact on floodplain function
Development has reduced impact on floodplain function
Transportation & service corridors have reduced impact on floodplain function
Natural system modifications
Freshwater levees & floodgates have reduced impact on floodplain function
Marine water levees & tidegates have reduced impact on floodplain function
Floodplain Recovery
By 2020, 15 percent of degraded floodplain areas are restored or floodplain projects to achieve that outcome are underway across Puget Sound and there is no additional loss of floodplain function in any Puget Sound watershed relative to a 2011 baseline.
Freshwater Systems
Nearshore Systems

Protect and Recover Salmon

The Challenge

Salmon are a symbol of the Pacific Northwest and Puget Sound. The tribal cultures of the Pacific Northwest developed around the salmon as an abundant and critical resource. In addition, salmon have been an integral part of the Puget Sound ecosystem for thousands of years – a critical food source for local wildlife and a source of nutrients for the streamside forests.

When early settlers arrived the salmon were initially viewed as an inexhaustible resource. However we know now that was not true. A history of habitat destruction, overharvesting, and poor hatchery practices have led to a significant decline of the salmon. Puget Sound Chinook, Hood Canal Summer Chum, Puget Sound steelhead and Puget Sound bull trout are all now listed under the federal Endangered Species Act.

There are currently 22 Chinook populations remaining, with estimated abundance at 10 percent or less than historic levels. In 2005, Recovery Plans were completed for Puget Sound Chinook Salmon and Hood Canal and Eastern Strait of Juan de Fuca Summer Chum. These National Oceanic and Atmospheric Administration (NOAA) -approved plans, along with the 2006 NOAA supplement and the watershed three-year work plans guide implementation of the salmon recovery plan. In addition, there is a draft bull trout recovery plan that is being updated and finalized by the US Fish and Wildlife Service.

The Chinook and Hood Canal Summer Chum Recovery Plans articulate a long-term (50 year) approach with consistent funding, an integration of the different management decisions across harvest, hatchery, habitat protection, and habitat restoration, and a flexible adaptation approach that incorporates new information. The salmon recovery plans call for protection and restoration of habitats (specifically estuaries, floodplains, riparian areas, and the nearshore), improved access to habitat, sufficient water flows, improved water quality, harvest management, hatchery management, as well as integration of habitat, harvest and hatchery actions.

Chinook and Summer Chum recovery work is an ongoing, long-term effort by tribes, state, federal and local government, non-governmental organizations, businesses and private landowners. Much of the work to implement the recovery plans is already underway and needs continued or more support. Challenges in implementing the approved salmon recovery plans include:

- Regional concerns about the lack of habitat protection: In the spring and summer of 2011, NOAA/National Marine Fisheries Service (NMFS) and the Northwest Indian Fisheries Commission (NWIFC) each published documents that present strong critiques of the existing habitat protection system. These documents highlight the need to improve regional habitat protection efforts so that ecological functions for salmon are sustained.
- Under-investment in capital projects: When the Chinook Plan was completed in 2005 the estimated annual investment for the first ten years was $120 million for Chinook and bull trout for capital and some non-capital actions. The investment rate has consistently been less than

half of this estimated need. The Summer Chum plan also estimated a need of $136 million for the first ten years for capital and non-capital actions.

- Addressing other barriers to habitat restoration: Potentially conflicting values for how best to manage the lands including resolving agricultural land needs with salmon habitat needs, addressing the impacts of transportation infrastructure such as highways and railroads, and permitting challenges for restoration projects.
- Under-investment in human infrastructure: Implementation of salmon recovery programs requires a robust human infrastructure within watersheds and regional entities. For local communities to agree on technically and community supported salmon recovery strategies and actions it is necessary to have people on the ground who can facilitate those conversations with all the relevant jurisdictions, tribes, and other stakeholders and also push for implementation of the high priority actions. Current staffing reductions are reducing the ability to implement harvest, hatchery, habitat restoration, and habitat protection actions.
- Lack of investment in several specific priorities identified in the Recovery Plans: Resolving technical and policy uncertainties about water availability and implementation of protective water quantity measures, resolving uncertainty about whether the regional water quality actions address the needs of salmon, furthering our understanding of watershed habitat status and trends, as well as project effectiveness to improve adaptive management, and a coordinated approach for making decisions associated with harvest, hatchery, habitat restoration, and habitat protection management.

Climate Change

While Pacific salmon have persisted in the face of exceptional climate variability for thousands of years – involving such large-scale factors as the advance and retreat of glaciers covering huge swaths of western North America – future climate change projections are troubling when considered in combination with the impacts that human development has had, and continues to have, on the landscapes of Puget Sound and elsewhere (Francis and Mantua 2003).

Pacific salmon have complex life cycles and highly diverse survival strategies, but all species rely to some degree on functional freshwater, estuarine, and marine habitat for successful reproduction, growth, and development. Impacts of climate change are likely to affect Pacific salmon across all of these habitats, but recent studies (e.g. Beechie et al. 2008; Mantua et al. 2008) have identified summertime stream temperatures, seasonal low flows, and changes in the frequency and magnitude of peak flow events as key pressures limiting the productivity of salmon populations in freshwater environments. By the latter half of this century, most watersheds in Puget Sound are likely to experience higher summertime water temperatures, lower summertime flows over longer periods of time, and higher peak flows occurring earlier in the winter/spring transitional period (Mantua et al. 2008). Particularly for species such as steelhead, coho, sockeye, and stream-type Chinook that rely heavily on freshwater for rearing over the first one to two years of life, these changes have the potential to significantly impact productivity. For others – such as pink, chum, and ocean-type Chinook – changes in freshwater environments will likely have relatively less impact.

Climate change is also expected to have a range of complex impacts on the marine environment. Projected warmer ocean temperatures are likely to increase stratification, yet potential increases in winds may counteract this impact and actually improve upwelling of the nutrients that drive oceanic food webs. In sum, though, the result of multiple stresses including altered thermal structure and

increasingly acidic waters is likely to be negative for the marine environment in general (Miles 2009), and by extension, for Pacific salmon specifically.

Francis and Mantua (2009) find that in general, salmon populations in regions with healthy habitat are likely to persist in the face of climate change as long as the time scale of environmental change does not exceed the rate at which they are able to adapt. Salmon recovery actions that focus on habitat restoration and protection – particularly in lower elevation watersheds (Battin et al. 2007) – with the intent of maintaining and increasing functional habitat are thus an important component of a larger suite of strategies to improve the capacity of salmon populations to withstand climate change impacts expected over the next half century, and beyond.

Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy (Draft April 2012) identifies high priority response strategies related to salmon recovery:

- **Improving water management to address climate-related water supply reduction.** This includes ensuring sufficient cold water in salmon bearing streams during critical seasons.
- **Safeguarding fish and wildlife and protecting critical ecosystem services** that support human and natural systems.
- **Reducing the vulnerability of coastal communities, habitat and species**.
- **Supporting the efforts of local communities** and strengthen capacity to respond and engage the public.

The State Strategy calls for reducing non-climate stressors to help fish, wildlife, plans and ecosystem be more resilient to the effects of climate change. The strategies and actions throughout the Action Agenda are designed to achieve this need. It also calls for managing species and habitats to protect ecosystem functions and provide sustainable cultural, recreational, and commercial use in a changing climate. This means incorporating climate change information into existing and new management plans, refining vulnerability assessments, conserving genetic diversity.

Salmon Recovery Plan and Action Agenda Integration

The Puget Sound Partnership is charged to integrate the recovery plans into the overall ecosystem recovery effort, and the Action Agenda update is the opportunity to detail that effort. This integration includes: setting a recovery target based on the existing Chinook recovery goals, adding recovery specific information to the Action Agenda strategies and actions with the strong nexus to salmon recovery, as well as identifying how those actions address salmon recovery priorities (and where ecosystem and salmon recovery priorities might differ), identifying actions that are particular to salmon recovery such as hatchery and harvest management, representing salmon recovery funding specific needs in the overall funding strategy priorities, and selecting a strategic initiative focused on salmon habitat protection.

Relationship to Recovery Targets

Salmon recovery goals: The Leadership Council adopted a recovery target for Chinook based on the Recovery Plan's long-term goal to achieve harvestable, self-sustaining levels of Puget Sound Chinook.

For Chinook, the Recovery Plan states that the Puget Sound Evolutionarily Significant Unit (ESU) of Chinook will have a negligible risk of extinction if: 1) All watersheds improve from current conditions, resulting in improving status for the fish; 2) At least two to four Chinook populations in each of five bio-geographical regions of Puget Sound attain a low risk status over the long-term; and 3) At least one or more populations from major diversity groups historically present in each of the five Puget Sound regions attain a low risk status. Each of the individual watershed chapters includes details on population targets 50 years out from 2003.

Strategy and Action Integration

Many strategies in the salmon recovery plan have other ecosystem benefits. Likewise, many of the strategies in the Action Agenda are essential for salmon recovery. With this Action Agenda update, the Partnership has taken the following steps to integrate the two and help achieve the recovery targets:

1) Identify which Action Agenda strategy categories had the strongest nexus to salmon recovery based on the Chinook and Summer Chum Recovery Plans. The vast majority of strategies and actions in the Action Agenda will support salmon recovery by improving ecosystem function.
2) Identifying relevant sections of the Recovery Plans that should be used in developing strategies and sub-strategies. In particular, the actions for land protection, nearshore and estuary restoration and freshwater flows were called out.
3) Check the pre-draft Action Agenda strategies and near-term actions to make sure that salmon recovery needs, or differences needing resolution, are identified. In some cases, modifications to the strategies and actions were made before the draft (e.g., some of the land use and floodplain strategies and actions). Each strategy area has a call out box that summarizes the related salmon recovery priorities, consistency and differences between the two plans.
4) Ask the Local Integrating Organizations working on the profiles and local priorities to be sure to consider the recommendations in their watershed chapters.
5) Update the Action Agenda text and near-term actions based on input during the public review process. The strategic initiative concept on habitat was broadly supported during the review, sub-strategies were clarified, and the near-term actions in A.6 and elsewhere were significantly strengthened as a result of the review.

Funding Strategy Integration

Funding is a key need for salmon recovery as well as for implementation of the Action Agenda. Major funding sources for salmon recovery include Pacific Salmon Recovery Funding through NOAA for habitat projects and other activities, Puget Sound Acquisition and Restoration (PSAR) for capital projects, and the Estuary and Salmon Restoration Program (ESRP), and local match through jurisdictions and other local partners. These funds, especially the local match, are becoming increasingly difficult to provide.

The following elements of the funding strategy have the strongest connection to the Recovery Plan funding needs.

- E1. Maintain and enhance federal funding for implementation of Action Agenda priorities. A near-term action is included to increase Pacific Coast Salmon Recovery Funds.
- E2. Focus federal agency budgets and national programs on Action Agenda priorities

- E3. Maintain, enhance and focus state funding for implementation of Action Agenda priorities. A near-term action is included to renew and increase Puget Sound Acquisition and Restoration Funds.
- E4. Maintain and enhance local funding for implementation of Action Agenda priorities. A near-term action is included in FS3 is designed to provide a mechanism to support local funding

Biennial Science Work Plan integration

Salmon recovery scientific needs are reflected in the Biennial Science Work Plan.

Local Priorities

Salmon recovery efforts occur in all local areas. Some local integrating organizations call out salmon recovery as a priority.

Local Integrating Organization	Priorities
Strait of Juan de Fuca	*Top Priorities* • Elwha River Ecosystem Recovery – Implement Elwha River Ecosystem Recovery Efforts and associated projects. • Salmon Recovery Plans (Puget Sound Salmon Recovery Plan, Hood Canal/ Eastern Strait of Juan de Fuca Summer Chum Recovery Plan, Puget Sound Steelhead Recovery Plan – in development) – Implement N. Olympic Peninsula Lead Entity (NOPLE) for Salmon and Hood Canal Coordinating Councils Lead Entity (HCCC-LE) 3-year Work Plans.
South Central	*Theme*: There needs to be a more concerted effort to effectively advocate for federal and state funding (including preserving current funding) for salmon recovery. In addition, there is a need for an integrated funding strategy for Puget Sound with salmon recovery and stormwater as central elements. The strategy should also be aligned with land use and regulatory changes *Top Priority* • Implement salmon recovery habitat protection and restoration recommendations.
South Puget Sound	*From Strategic Initiative: Salmon Recovery/Habitat Restoration* • Implement 3- year work plans (top tier/high priority projects) • Fully implement the 2011 Nisqually Fall Chinook Stock Management Plan
Hood Canal	*High Priority* • Hood Canal Coordinating Council Lead Entity for salmon recovery will target funding to highest Tier I salmon recovery projects between 2012-2014
Whatcom	*From working strategy list* • Continue implementing WRIA 1 Salmonid Recovery Plan key actions.

Local Integrating Organization	Priorities
West Puget Sound	*From working strategy list* • Integrate harvest and hatchery plans into local recovery planning • Engage regional leaders in funding solutions for high price, high priority capital projects (e.g. SR3 Bridge at Chico) • Assist with regional and local Steelhead Recovery Planning
San Juan Islands, Skagit Watershed, Stillaguamish and Snohomish Watersheds, Island Watershed	Implementation of the salmon recovery plans is an important action these areas.

A6. Protect and recover salmon

A6.1 Implement high priority projects identified in each salmon recovery watershed's three-year work plan.

In addition to the strategies and actions identified in the watershed chapters of the original Puget Sound Chinook Recovery Plan, each of the watersheds associated with a chapter in the Recovery Plan annually updates their proposed salmon recovery project list. This list always looks three years out and is referred to as the three-year work plan. The watershed community prioritizes these projects based on the strategies outlined in their chapter.

The pace of implementation of these projects has been much slower than originally envisioned in the plan due to both financial and other barriers to implementation. The following near-term actions are intended to address some of these key barriers.

Ongoing Programs

Key Ongoing Program Activities

- Updating and implementing the three-year work plans is a key ongoing program. Several local integrating organizations identified implementation of their local three-year work plan as a near-term action. While not all three-year work plans are listed as near-term actions in 2012, the plans are being implemented.

Near-Term Actions

A6.1 NTA 1: **Secure Annual Chinook Investment. PSP, in collaboration with the Salmon Recovery Council, will secure the annual investment as required to fully implement the approved Puget Sound Chinook Salmon Recovery Plan, and work to align that funding in support of the highest priority protection and restoration projects as identified by salmon recovery lead entities. This investment strategy will be developed as part of the overall Puget Sound recovery funding strategy.**

Performance measures: By December 2013, the $120 million as estimated in 2005 is in place from a variety of federal, state, local, and private sources. By January 2014, update

the estimate needed to implement the plan and make the related administrative changes to the NOAA-approved recovery plan, and adjust the performance measure to reflect the estimate. Obtain the new annual investment by December 2014.

A6.1 NTA 2: **Restoration Permit Barriers. By June 2014 identify and address barriers to faster permitting of salmon recovery restoration projects so that the majority of restoration projects can begin construction within one year of completing design and securing funding. By September of 2012, PSP will initiate this process and identify a lead and next steps.**

Performance measure: By September 2012, PSP identifies a lead and by December 2012, works with that lead to complete a scope of work. By June 2013, at least three major barriers and ways to address them have been identified. By December 2013, steps to address the barriers are in place.

A6.1 NTA 3: **BNSF Railroad Cooperative Agreement. By December 2013, PSP, in collaboration with the Salmon Recovery Council, will develop a cooperative agreement with Burlington Northern Santa Fe Railroad to enable the implementation of high priority salmon recovery projects that intersect with the railroad right of way.**

Performance measure: Convene a workshop with salmon recovery, other ecosystem recovery project implementers, and PSNERP to document progress to date with BNSF and identify next steps to develop an agreement by December 2012. Initial agreement framework with BNSF completed by June 2013. Cooperative agreement in place by December 2013.

A6.1 SJI 9: **San Juan County Lead Entity. San Juan County Lead Entity for Salmon Recovery will target funding to highest Tier I salmon recovery projects between 2012-2014, as listed in the San Juan Salmon Recovery three-year work plan for WRIA 2. Projects include acquisition and conservation easements, protection and restoration actions.**

Performance measure: To be determined.

A6.1 STRT 1: **Elwha River Ecosystem Recovery. Implement Elwha River Ecosystem Recovery Efforts and associated projects:**
a. Stock preservation and weir operation
b. Monitoring (adults, juveniles, smolts)
c. Habitat restoration projects

Performance measure: Continuous weir operation and monitoring of salmonids (adults, juveniles, and smolts) on the Elwha River

A6.1 STRT 2: **Straits Salmon Recovery Plans: Implement N. Olympic Peninsula Lead Entity (NOPLE) for Salmon and Hood Canal Coordinating Councils Lead Entity (HCCC-LE) 3-year Work Plans:**
a. North Olympic Peninsula Lead Entity (NOPLE) 3-year Work Plan
b. NOPLE Elwha revegetation project
c. NOPLE Dungeness River floodplain restoration, Phase II

d. NOPLE Elwha Engineered Log Jams
e. Hood Canal Coordinating Council (HCCC) LE 3-year Work Plan
f. HCCC LE Snow Creek and Salmon Creek estuary restoration

Performance measure: Initiate or significantly advance all of the four specific Priority Actions identified by the Strait ERN for the Strait Action Area.

A6.1 HC 6: **Hood Canal Salmon Recovery. Hood Canal Coordinating Council Lead Entity for salmon recovery will target funding to highest Tier I salmon recovery projects between 2012-2014, as listed in the Hood Canal Three-Year Work Plan. Projects include acquisition, protection, and restoration actions.**

Performance measure: To be determined.

A6.1 WS 9: **West Sound SR3 Chico Creek Culvert Replacement. By December 2013, the West Sound LIO, in coordination with Washington Department of Transportation, will develop a funding strategy and schedule for replacing the SR3 culvert with a bridge on Chico Creek.**

Performance measure: By December 2013, funding strategy and schedule completed.

A6.2 Implement the high priority salmon recovery actions identified in other parts of the Action Agenda and the Biennial Science Work Plan.

The vast majority of strategies and actions in the Action Agenda will support salmon recovery by improving ecosystem function. Full implementation of the Action Agenda will support salmon recovery.

Near-Term Actions

A6.2 NTA 1: **Implement the Puget Sound Federal Agency Action Plan. Federal agencies with authorities in Puget Sound will work to implement and account for actions listed in the federal agency action plan and matrix to protect and restore habitat and respond to the concerns raised by treaty tribes in western Washington.**

Performance measure: By December 2012, EPA will work with Puget Sound Federal Caucus agencies to identify priority activities from the federal action plan and matrix which can be achieved in the near term and develop a tool for tracking and reporting on the progress of these actions. Work will also continue on all activities identified in the matrix.

Comment [KG4]: New NTA proposed by EPA

"Existing NTAs and ongoing programs described in the Action Agenda do not adequately capture the scope and volume of the work that federal agencies have committed to achieving in response to the Treaty Rights at Risk white paper. This NTA will capture this work and provide a mechanism for federal agencies to provide updates on their progress."

A6.3 Implement harvest, hatchery, and adaptive management elements of salmon recovery.

The Chinook recovery plans have unique actions related to harvest management, hatchery management and adaptation.

Ongoing Programs

- *Harvest management*: Harvest of salmon in Puget Sound is co-managed by the Treaty Tribes and the State of Washington. Fisheries are focused on healthy wild runs and hatchery salmon but there is some incidental take of listed stocks as well. The National Marine Fisheries Service reviews the plan that guides fisheries management decisions made by the co-managers to evaluate its potential impact on recovery. The Comprehensive Management Plan for Puget Sound Chinook: Harvest Management component submitted by the Puget Sound tribes and the state of Washington was approved by NMFS in 2011 and will be in effect through 2014.
- *Hatchery management:* To evaluate the impact of hatcheries and hatchery actions on recovery of listed species, NMFS requires each hatchery to submit a Hatchery Genetic Management Plan (HGMP). This plan describes the operation of the hatchery and evaluates the potential impact of those operations on recovery of listed species. Draft plans have been submitted to NOAA for review by the tribal and state hatcheries in Puget Sound. In addition the tribes and the state of Washington are working together to write Hatchery Action Implementation Plans (HAIPs) that consolidate descriptions of hatchery programs from each watershed into a single document that addresses co-manager priorities, legal requirements of the Puget Sound Salmon Management Plan and Endangered Species Act, and recommendations of the Hatchery Scientific Review Group. These plans also will describe how the hatchery actions will integrate with harvest management and habitat actions to work towards achieving salmon population goals.
- *Monitoring and adaptive management:* Monitoring of salmon populations and habitat is ongoing work that needs to continue. Ongoing work also includes development of the adaptive management plans that document the changes in the limiting factors and salmon populations, as well as incorporates this information into implementation. This work is being conducted by both by the Recovery Implementation Technical Team (RITT) and watershed groups, but needs funding to advance. There is also a significant gap in our understanding of how landscape changes impact our ability to recover salmon. Continued and increased investment in watershed based habitat status and trends monitoring, as well as project effectiveness monitoring is key to improving our adaption efforts. Work has begun to integrate these and other salmon recovery monitoring needs into the broader Puget Sound Monitoring Program.

Key Ongoing Programs

- Harvest: Implementation of the Comprehensive Management Plan for Puget Sound Chinook: Harvest Management component.
- Hatcheries: Completion and implementation of Hatchery Genetic Management Plans
- Adaptive Management and Monitoring: The coordinated adaptation work of the watersheds, RITT and NOAA.

Near-Term Actions

A6.3 NTA 1: **Implementation of Hatchery Actions. WDFW and the tribes, in coordination with NOAA Fisheries, will advance implementation of hatchery actions by completing and approving Hatchery Genetic Management Plans by December 2013.**

Performance measure: By August 2012, co-managers (tribes and WDFW) complete Hatchery Genetic Management plans (HGMPs) for at least the first ten key Puget Sound

hatchery programs and submit them to NOAA Fisheries; By April 2013, NOAA-Fisheries issues permits for at least the first ten key HGMPs; By December 2012, Co-managers complete and submit the balance of the HGMPs to NOAA-Fisheries; By December 2013, NOAA issues hatchery permits for updated Hatchery Genetic Management Plans.

A6.3 NTA 2: **Salmon Recovery Monitoring and Adaptive Management Plans. PSP, in coordination with the Puget Sound Recovery Council and the Puget Sound Regional Implementation Technical Team (RITT), will facilitate and support salmon recovery watershed groups to complete and implement monitoring and adaptive management plans for each Puget Sound Salmon Recovery watershed chapters by June 2014. This is a condition of the approved Chinook Recovery Plan to improve the quality and success of plan implementation.**

Performance measure: Monitoring and adaptive management plans for three watersheds by March 2013; implementation performance measures for these three watersheds by June 2013; Monitoring and adaptive management plans for remaining eleven watersheds by July 2014; Implementation performance measures for these eleven watersheds by September 2014. All fourteen watersheds will be complete with steps 1 and 2 of the RITT Framework (Step 1: Modify the generic portfolio of elements (common framework) based on individual watershed chapter; Step 2: Develop conceptual model for watershed chapter by Dec 2012.~~Three monitoring adaptive management plans completed by December 2012, 5 more completed by December 2013, and 6 more completed by July 2014. Within two months of completing each plan, implementation performance measures will be identified.~~

A6.4 Protect and recover steelhead and other imperiled salmonid species.

Puget Sound steelhead were recently listed as threatened under the Endangered Species Act and planning for the recovery of Puget Sound steelhead is now underway. The ongoing coordination with NMFS, the Governor's Salmon Recovery Office, Puget Sound Partnership and the Puget Sound watersheds to develop a Puget Sound Steelhead Recovery Plan needs to continue.

Near-Term Actions

A6.4 NTA 1: **Steelhead Population Identify Report and Viability Criteria. By July 2012, NOAA via the Puget Sound Steelhead Technical Recovery Team will finalize a population identification report and viability criteria for steelhead populations within the Puget Sound Steelhead Distinct Population Segment.**

Performance measure: Steelhead population and identification report and viability criteria completed by July 2012.

A6.4 NTA 2: **Steelhead Recovery Plan. Complete development process for a Puget Sound steelhead recovery plan by 2015. PSP will assist and facilitate the Puget Sound Salmon Recovery Council in the initial steps needed in order to submit a draft Puget Sound steelhead recovery plan to NOAA for federal review by December 2014. These plans will be inclusive and integrated and will look at various implementation actions to achieve**

recovery, including actions like the designation of Wild Steelhead Management Zones where consistent with the objectives identified in the watershed specific recovery plans. WDFW and the tribes, by agreement of the co-managers, will work to establish 3 streams (one in each Technical Recovery Team identified Major Population Group) where no juvenile hatchery steelhead would be released, no recreational fisheries for steelhead would occur, and habitat protection and restoration actions would be accelerated. This early steelhead recovery action would consider information already compiled for the Steelhead Recovery Plan that is under development.

Performance measure: PSP to convene meetings to identify steelhead recovery plan lead, plan costs and funding by October 2012, RFP out to draft chapters for populations by December 2012, Chapters for 2-5 populations completed by July 2013, and remaining chapters drafted by July 2014 with Plan submitted to NOAA by December 2014.

A6.4 WS 11: **West Sound Steelhead Recovery Chapter. By July 2013, the West Sound Watersheds Council will develop a local chapter of a Steelhead Recovery Plan. The Council will propose a budget and implementation strategy for its local chapter of the Recovery Plan by December 2013.**

Performance measure: Local chapter developed by July 2013, budget and implementation strategy for local chapter by December 2013.

A6.5 Maintain and enhance the community infrastructure that supports salmon recovery.

Implementation of the salmon recovery plans requires a robust infrastructure within local watersheds and at the Soundwide, federal, tribal, and state level to implement the habitat, harvest and hatchery actions. Both the capacity to do the work and the implementing structures do the work in the best way possible are needed. The following is a list of entities to be kept strong and integrated for salmon recovery:

Ongoing Programs

- *Lead Entities*: Lead Entities are responsible for local coordination related to managing and advancing watershed-level strategic restoration protection and restoration activities. Their work includes managing the three-year work plans that articulate near-term recovery actions and adapting local strategies (RCO, local match) .
- *Local Jurisdictions*: Cities and counties are responsible for many of the decisions about habitat protection and land use management as well as key participants in habitat restoration actions. Local jurisdictions include counties, cities, and special districts such as drainage and public utility districts.
- *Co-managers*: The tribes and WDFW are responsible for determining appropriate harvest rates and implementing the recommendations of the Hatchery Science Review Group (HSRG)
- Other state agencies, notably the Governor's Salmon Recovery Office (State-level direction and coordination) and the Recreation and Conservation Office (grant management for protection and restoration projects).
- *Tribes*: Strongly connected to salmon recovery through tribal treaty rights, technical expertise, cultural values, and political work.

- *NOAA*: The federal agency responsible for the Chinook, Summer Chum, and Steelhead plans
- Other federal agencies: Notably USFWS (responsible for Bull Trout), Army Corps of Engineers (water resources), FEMA (floodplain management), EPA (water pollution and other water resources).
- *Project Sponsors*: A broad array of sponsors implement habitat restoration projects including but not limited to local governments, regional fisheries enhancement groups, land trusts, tribal governments, and conservation districts.
- *Puget Sound Partnership*: The state agency that, by statute, administers the regional salmon recovery program. This includes coordination of the annual updates to the Chinook recovery strategy and related three-year work plan from each Puget Sound salmon recovery watershed, facilitating regional agreement across Puget Sound on the distribution of available salmon recovery funds, assisting the watersheds in developing and submitting to the state Salmon Recovery Funding Board an annual prioritized list of salmon recovery projects for funding, staffing and facilitating the work of the Puget Sound Salmon Recovery Council and the Watershed Leads to support regional collaboration and decision making on salmon recovery plan implementation, facilitating the Regional Technical Implementation Team (RITT) to provide scientific guidance on salmon recovery implementation, as well as facilitating regional discussions and strategy development for implementation of priority actions in and funding for the salmon recovery plan.

Current budget constraints have resulted in loss of staffing at all levels mentioned above, impacting our collective ability to implement salmon recovery. Funding for this capacity, including for keeping the entities engaged, is increasingly difficult.

Near-Term Actions

A6.5 NTA 1: **Lead Entity and Partner Funding Strategy. By December 2012, PSP in collaboration with the Salmon Recovery Council and RCO, will identify a funding strategy and approach to support salmon recovery lead entities and the associated partner programs essential to implementing the salmon and steelhead recovery.**

Performance measure: Strategy and approach completed by December 2012.

Emerging Issues and Future Opportunities

- Integrate climate change scenario information, including water availability and sea level rise, in three-year work plans and funding programs. This could include adjusting prioritization criteria for project sponsors and funders.
- Addressing liability issues for private landowners with restoration projects on their land.

Target View: Wild Chinook Salmon

Salmon remain an important part of the economic and cultural identity of Puget Sound. The goal of the region's recovery plan is that there is a 95 to 99 percent probability that Puget Sound Chinook salmon can persist on their own for 100 years. This equates to an abundance of 60,580 to 271,640 wild Puget Sound Chinook salmon, depending on the productivity of the Chinook populations.

Puget Sound Chinook have an approved plan developed by local watershed communities, and are one of the few species in Puget Sound that have numerical targets and benchmarks for recovery. Chinook salmon are generally at less than 10 percent of their historic levels in Puget Sound river systems, with some below one percent. An estimated eight to 15 populations of Chinook have been lost entirely.

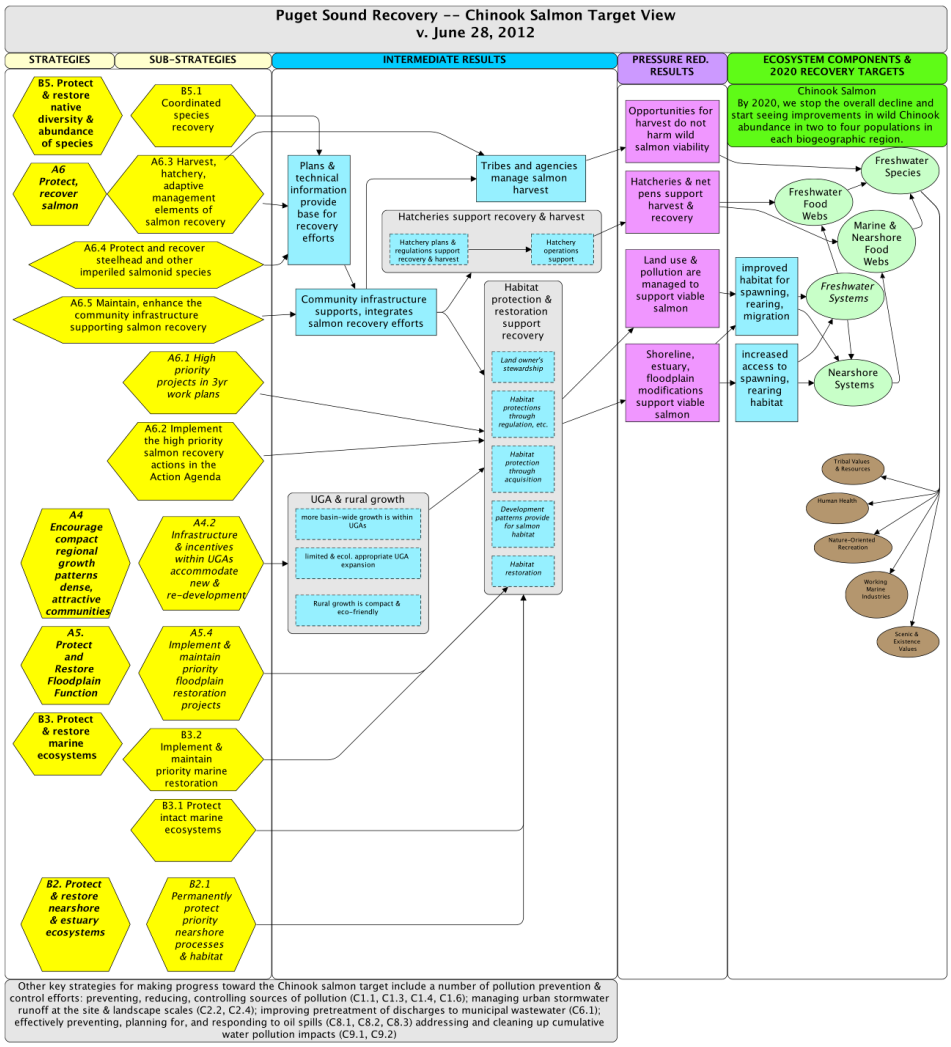
The 2020 recovery target for wild Chinook salmon is:

- We stop the overall decline and start seeing improvements in wild Chinook abundance in two to four populations in each biogeographic region.

The Action Agenda strategies most related to the wild Chinook salmon target are:

- Protect and recover salmon (A6.1, A6.2, A6.54, A6.3, A6.4)
- Protect and restore marine ecosystems (B3.2, B3.1)
- Implement species recovery plans in a coordinated way (B5.1)
- Prevent, reduce, and control the sources of contaminants entering Puget Sound (C1.3, C1.6, C1.1, C1.4)
- Effectively prevent, plan for and respond to oil spills (C8.1, C8.2, C8.3)
- Address and clean up cumulative water pollution impacts in Puget Sound (C9.2, C9.1)
- Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales (C2.4, C2.2)
- Implement and maintain priority floodplain restoration projects (A5.4)
- Permanently protect priority nearshore physical and ecological processes and habitat (B2.1)
- Reduce the concentrations of contaminant sources of pollution conveyed to wastewater treatment plants (C6.1)
- Provide infrastructure and incentives to accommodate new and re-development within urban growth areas (A4.2)

In the following results chain, or logic model, yellow polygons identify strategies and sub-strategies from the Action Agenda that we believe will contribute significantly towards meeting the target. Arrows to the blue boxes describe the intermediate results the strategies and actions are expected to achieve. The purple boxes show the reduced pressure on the ecosystem that is expected to occur, the green ovals show the areas of the ecosystem where the change will be observed, and the dark green square shows the recovery targets.


Puget Sound Recovery -- Chinook Salmon Target View
v. June 28, 2012
STRATEGIES
SUB-STRATEGIES
INTERMEDIATE RESULTS
PRESSURE RED. RESULTS
ECOSYSTEM COMPONENTS & 2020 RECOVERY TARGETS
B5. Protect & restore native diversity & abundance of species
B5.1 Coordinated species recovery
A6 Protect, recover salmon
A6.3 Harvest, hatchery, adaptive management elements of salmon recovery
A6.4 Protect and recover steelhead and other imperiled salmonid species
A6.5 Maintain, enhance the community infrastructure supporting salmon recovery
A6.1 High priority projects in 3yr work plans
A6.2 Implement the high priority salmon recovery actions in the Action Agenda
A4 Encourage compact regional growth patterns dense, attractive communities
A4.2 Infrastructure & incentives within UGAs accommodate new & re-development
A5. Protect and Restore Floodplain Function
A5.4 Implement & maintain priority floodplain restoration projects
B3. Protect & restore marine ecosystems
B3.2 Implement & maintain priority marine restoration
B3.1 Protect intact marine ecosystems
B2. Protect & restore nearshore & estuary ecosystems
B2.1 Permanently protect priority nearshore processes & habitat
Plans & technical information provide base for recovery efforts
Tribes and agencies manage salmon harvest
Hatcheries support recovery & harvest
Hatchery plans & regulations support recovery & harvest
Hatchery operations support
Community infrastructure supports, integrates salmon recovery efforts
Habitat protection & restoration support recovery
Land owner's stewardship
Habitat protections through regulation, etc.
Habitat protection through acquisition
Development patterns provide for salmon habitat
Habitat restoration
UGA & rural growth
more basin-wide growth is within UGAs
limited & ecol. appropriate UGA expansion
Rural growth is compact & eco-friendly
Opportunities for harvest do not harm wild salmon viability
Hatcheries & net pens support harvest & recovery
Land use & pollution are managed to support viable salmon
Shoreline, estuary, floodplain modifications support viable salmon
Chinook Salmon
By 2020, we stop the overall decline and start seeing improvements in wild Chinook abundance in two to four populations in each biogeographic region.
improved habitat for spawning, rearing, migration
increased access to spawning, rearing habitat
Freshwater Species
Freshwater Food Webs
Marine & Nearshore Food Webs
Freshwater Systems
Nearshore Systems
Tribal Values & Resources
Human Health
Nature-Oriented Recreation
Working Marine Industries
Scenic & Existence Values
Other key strategies for making progress toward the Chinook salmon target include a number of pollution prevention & control efforts: preventing, reducing, controlling sources of pollution (C1.1, C1.3, C1.4, C1.6); managing urban stormwater runoff at the site & landscape scales (C2.2, C2.4); improving pretreatment of discharges to municipal wastewater (C6.1); effectively preventing, planning for, and responding to oil spills (C8.1, C8.2, C8.3) addressing and cleaning up cumulative water pollution impacts (C9.1, C9.2)

Protect and Conserve Freshwater Resources

The Challenge

Surface water flows and groundwater levels in most watersheds of Puget Sound have been altered as a result of dams and other hydrological modifications, loss and change of vegetative cover, water withdrawals for municipal, domestic, commercial, industrial, and agricultural water supplies, and in some cases, over-allocation of water rights. Climate change will compound these problems by reducing snowpack and groundwater infiltration, increasing stormwater runoff, raising stream temperatures, and concentrating pollutants in water bodies. As a result, Puget Sound aquatic habitats are degraded, native species have declined, and there is an uncertain future water supply for human consumption, especially in rural areas. Low water flows are identified as priority issues for salmon in 14 of the 19 Puget Sound Water Resource Inventory Areas (WRIA).

Climate Change

Increasing temperatures will significantly reduce snowpack in Cascade and Olympic Mountains. This will lead to reduced summer streamflows, reduced soil moisture, higher summer stream temperatures, and an increased risk of drought for water users, including agriculture, municipalities, and fish and wildlife. Increased water demand could increase the potential for conflict among users. Coldwater fish species including salmon, steelhead, and bull trout are especially at risk.

One of the high priority, overarching strategies in *Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy* (April 2012) is to improve water management to address climate-related supply reductions. This strategy includes promoting integrated water management in vulnerable basins, implementing enhanced water conservation and efficiency programs, ensuring sufficient cold water in salmon-bearing streams during critical seasons, and adapting water management and planning practices to reflect changing water availability and flow timing.

Recommended actions include, but are not limited to, developing guidance on whether and how to incorporate projected climate information and adaptation actions into planning, policy and investment decisions related to approval of new or changing existing water rights, adoption of instream flow rules, implementing well-coordinated land and water policies, fostering climate-ready utility initiatives, improving existing water infrastructure, and adopting up-to-date water conservation technologies.

The sub-strategies in this section help to implement the state strategy, as do strategies in Sections A1-5 and C2 of the Action Agenda. Additional adaptation work will be needed for this strategy in the future.

SALMON RECOVERY

Freshwater – A Salmon Recovery Plan Priority: Adequate water availability is critical for salmon. Water availability for salmon recovery also includes the timing and the type of flow (e.g. peak flows, rain-on-snow events, water levels during summer vs levels during spring). The Recovery Plan calls for resolving technical and policy uncertainties around water availability and flow, and the implementation of protective water quantity measures.

How are these priorities integrated: While the Action Agenda strategies and actions have some actions around instream flows and water availability, the Recovery Plan places a higher emphasis on resolving the water availability issues than is highlighted in the Action Agenda. The flow work has not advanced in the region as articulated in 2005. More work is needed to address the concerns around instream flows for salmon recovery.

Puget Sound watersheds require a comprehensive approach to protecting year-round, instream flows for people and instream uses. This is particularly important with increasing human population in the region and concomitant projected increases in water demand. Current approaches to managing stream flows, groundwater, water use, land use, and stormwater management are fragmented and the many programs that address water quantity are not coordinated. Many of the programs for managing water are funding from the State's General Fund, and have seen disproportionate cuts in recent years. A fundamental realignment in policy, regulation, and funding structure is needed at the state level to repair the system, one that ensures the protection of natural hydrologic processes and associated habitats within Puget Sound watersheds. Some of these actions will also help improve water quality.

Relationship to Recovery Targets

Puget Sound has a specific recovery target for summer stream flows that support salmon habitat needs, other ecosystem needs, and provide water for people. This target includes a series of river-specific sub-targets to be achieved by 2020:

- Maintain stable or increasing flows in highly regulated rivers (Nisqually, Cedar, Skokomish, Skagit, Green)
- Monitor low flow in the Elwha River after dam removal
- Maintain stable flows in unregulated rivers that currently are stable (Puyallup, Dungeness[18], Nooksack)
- Restore low flows to bring the Snohomish River from a weakly decreasing trend to no trend
- Restore low flows to bring the Deschutes River[1], North Fork Stillaguamish River, and Issaquah Creek from a strongly decreasing trend to a weakly decreasing trend

The strategies in this section are designed to help achieve the targets. Protecting and improving stream flows also will help support recovery targets related to insects in small streams, wild Chinook salmon

[18] These stations are high in the watershed and do not reflect significant water resources activity downstream. For example, ongoing work is increasing late summer/fall flows in the Dungeness River downstream of this gage, identified as critically limiting to recovery of listed species.

abundance (which in turn supports recovery targets for Puget Sound resident killer whales), and freshwater quality.

Local Priorities

Some local integrating organizations identified conservation of freshwater resources as a high priority.

Local Integrating Organization	Priorities
Strait of Juan de Fuca	*Top priority* • Instream Flow Rules – Adopt and/or implement instream flow rules for Water Resource Inventory Areas (WRIAs) 17, 18 East, 18 West, and 19
West Puget Sound	*From working priority list* • Rank, fund and construct water reuse projects in the West Sound that emphasize reusing water for consumptive use first • Identify opportunities to conserve groundwater within aquifers and reserve instream flow; Develop watershed by watershed "budgets"
Whatcom	*From working priority list* • Continue implementing WRIA 1 Watershed Management Plan-Phase 1 • Implement instream flow restoration projects
Hood Canal	*From General priorities* • Work with WRIA planning units to implement priority actions

A7. Protect and conserve freshwater resources to increase and sustain water availability for instream flows

The aim of this strategy is to develop coordinated, watershed-based water management approaches, accounting for existing ecosystem goals, water management agreements, projected future climate conditions and water availability, projections of future instream flow demands, and maintaining low flows in tributaries. This strategy approaches freshwater protection and conservation from three perspectives:

- Regulation, monitoring, and enforcement
- Water demand and conservation
- Ground water supplies and recharge

A7.1 Update Puget Sound instream flow rules to encourage conservation.

A critical tool for protecting and conserving freshwater resources is rulemaking for instream flows. The Washington State Department of Ecology (Ecology) has authority to set instream flows under several statutes – Chapters 90.22, 90.54, and 90.82, of the Revised Code of Washington. The term "instream flow" is used to identify a specific stream flow (typically measured in cubic feet per second, or cfs) at a

specific location for a defined time, and typically following seasonal variations. Instream flows are usually defined as the stream flows needed to protect and preserve instream resources and values, such as fish, wildlife, water quality, aesthetics, and recreation.

It is important to note that instream flows are intended to set limits on the use of other, less senior water users. Often instream flows, once established, will not be met for much of the time. Instream flows can help to stop the decline of stream flows. However, other programs are needed to restore flow levels so that instream flows can be met more often.

Instream flows are most often described and established in a formal legal document, typically an adopted state rule. Ecology establishes in stream flow rules through the Administrative Procedures Act (RCW 34.05). In areas of the state where watershed planning has occurred, local planning units can make recommendations to Ecology for instream flow rules to be established or, for existing rules, amended. The Washington Department of Fish and Wildlife (WDFW) provides technical assistance in the form of instream flow studies, flow study interpretation and analysis in light of hydrology and species-specific ecology, developing instream flow recommendations based on interpretation of instream flow study results, and explaining instream flow ecology and methods to stakeholders.

Most of the watersheds in Puget Sound's WRIAs 1, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 17 are currently covered by instream flow rules. Only four of these rules, however, address permit-exempt groundwater withdrawals that can have a cumulative effect on stream flows, especially in late summer. For example, the instream flow rule for Kennedy– Goldsborough WRIA 14 was codified in 1988 and has not been updated. In general in the Puget Sound region, there is limited data on actual water use and the effects of groundwater withdrawal on stream flows. This lack of data can make it hard to understand and communicate how additional water withdrawals might impact senior water right users, and listed species.

An additional challenge to updating instream flow rules is the degree of local support and/or opposition to the rule-making process within any given basin. The degree of support or opposition can greatly influence both the cost and time required to adopt or update a rule, as evidenced by recent rule-making activity in WRIA 17 and WRIA 18. New instream flow rules often limit access to groundwater supplies, raising concerns among home builders, realtors, and property owners. To address this challenge, it will be important to work with local officials, legislators, tribes, and stakeholders to reach agreement on regulatory approaches and solutions to water supply problems. Finding solutions to the growing demand for water can take longer than developing the rule language itself. Education and outreach efforts are also critical for building public understanding and support. Outreach strategies would be tailored for specific basins. Ecology's staffing for instream flow rules has been reduced in recent years due to budget cuts – there are currently only two instream flow rule writers for this work statewide.

Ongoing Programs

Ecology's Watershed Plan Implementation and Flow Achievement Capital Grant Program and Watershed Planning Operating Budget Grants include specific technical approval criteria such as amount of water added to instream flows and improvements to fish habitat.

Performance measures from Ecology's Water Resources Division include: two instream flow rules adopted (Q6, 2009–2011 biennium), number of instream flow rules adopted, zero percent of monitored stream flows below critical flow levels, and 1,250 acre-feet of water saved for instream flow (for each

period, 2009–2011 biennium). Additional measures include percentage of Hood Canal summer chum and Puget Sound Chinook stocks with spawner escapement (number of fish returning to a stream or river to spawn) exceeding their 1993-97 pre-ESA listing base period. An increasing number of populations with spawner escapement exceeding the population's pre-ESA base period would indicate progress toward a healthier Puget Sound ecosystem.

Ongoing programs also establish minimum flow regimens on rivers where flows are controlled by dams. In general, these rivers have stable or positive trends relative to minimum flows. Note that minimum flow requirements for dam releases is just one mitigation for a variety of negative environmental impacts that dams can cause. There are six Puget Sound rivers where flows are highly controlled by dams: the Cedar River, the Elwha River (although this will change in the future as the dams are removed), the Green River, the Nisqually River, the Skagit River, and the Skokomish River. Two additional Puget Sound rivers, the Deschutes River and the Snohomish River, are slightly regulated by dams.

Key Ongoing Program Activities

- Ecology will continue to support implementation of the recommendations from approved watershed plans prepared under the Watershed Planning Act (RCW 90.82), to the extent possible within legislatively-approved funding levels, consistent with the Action Agenda and coordinated with other local restoration and protection efforts. Approved watershed plans in Puget Sound include Nooksack, San Juan, Island, Nisqually, Skokomish-Dosewallips, and Quilcene. Other areas stopped the RCW 90.82 planning process (Kitsap, Kennedy-Goldsborough, Chambers-Clover, Deschutes, Lower Skagit-Samish, Upper Skagit), and still other areas are not expected to participate in RCW 90.82 planning (Stillaguamish, Snohomish, Cedar-Sammamish, Duwamish-Green, Puyallup-White). Work is needed to provide support and funding for flow-protection and enhancement actions in approved watershed plans.
- Ecology will renew efforts to require metering in all new and existing diversions in the Puget Sound region and use metering data in making water availability decisions, modeling groundwater, and updating instream flow rules.

Near-Term Actions

A7.1 NTA 1: **Set Instream Flows in Priority Watersheds. Ecology, with support from WDFW, will by 2020 set flow rules in the remaining priority Puget Sound watersheds that currently do not have instream flow rules:**

1. **Dungeness River portion of WRIA 18 (currently in progress – to be completed by 2013);**
2. **WRIA 16;**
3. **The western portion of WRIA 17 (Sequim Bay watershed); and**
4. **The western portion of WRIA 18 (Elwha-Morse watershed planning area).**

Priority will be given to critical basins or those with known significant problems meeting instream or out-of-stream demands. Note that including the Elwha River in an instream flow rule may be delayed because of the need to develop a method to determine and set instream flows in the Elwha after dam removal and river stabilization.

Performance measure: Done or not.

A7.1 NTA 2: **PEP Development and Implementation. Ecology will develop and implement the comprehensive basin flow protection and enhancement programs (PEP) called for in the recovery plans for Puget Sound Chinook and Hood Canal/Strait of Juan de Fuca summer Chum. By 2014 Ecology will identify near-term flow recovery targets and initiate a PEP program for a high priority watershed.**

Performance measure: Done or not.

A7.1 NTA 3: **Water Code Compliance and Enforcement. Ecology will establish a strong program for Puget Sound watersheds to increase water code compliance and enforcement. This program will include the creation of Ecology "compliance officer" staff positions. These positions would be similar to "water masters" used in other parts of the state, but also different because of the absence of adjudication and increased focus on mitigation strategies. By 2013, Ecology will develop a program plan to meet this goal. This plan will include identifying funding sources, a schedule, duties, and geographic jurisdiction for compliance officers, who will be local contacts to water users, provide a local compliance presence, protect the resource, support mitigation, reduce water use, and protect senior water rights, including instream flows.**

Performance measure: Done or not.

A7.1 STRT 6: **Strait Instream Flow Rules. Adopt and/or implement Instream Flow Rules for Water Resource Inventory Areas (WRIAs) 17, 18 East, 18 West, and 19.**

a. Adopt and implement Dungeness Instream Flow and Water Management Rule
b. WRIA 18 East stream flow improvements
c. Implement WRIA 17 Instream Flow and Water Management Rule
d. Adopt Instream Flow Rules for WRIA 18 West
e. Adopt Instream Flow Rules for WRIA 19

Performance measure: Initiate or complete 66% of the Priority Actions identified by the Strait ERN for the Strait Action Area.

A7.2 Decrease the amount of water withdrawn or diverted and per capita water use.

The previous sub-strategy focused on regulation and monitoring of freshwater resources through implementation of instream flow protection programs; this sub-strategy considers freshwater resource protection through demand and conservation strategies. Managing demand and promoting conservation will be critical as the human population increases in the Puget Sound region. Population stress on water supply will be further exacerbated by predicted decrease in snow-pack and increased frequency of droughts brought about by climate change. The near-term objectives for water demand and water conservation address four key sectors: municipalities, agriculture, industry, and rural domestic water users. Demand and conservation goals will be met through a combination of implementation/enforcement of rules, voluntary participation in conservation programs, market-based approaches to adjust water usage, and deployment of current and emerging water conservation technologies.

Ongoing Programs

Key Ongoing Program Activities

- The Partnership will support municipal water systems' implementation of Washington Department of Health's Water Use Efficiency Rule, including establishing water conservation goals, metering, and reporting from all municipal suppliers.
- Ecology will support an increase in periodic audits of industrial water users.

Near-Term Actions

None. Work in the near-term is focused on implementation of ongoing programs.

A7.3 Implement effective management programs for groundwater.

A critical approach to protection and restoration of freshwater resources includes management of groundwater in conjunction with surface water to better account for the interaction between the two.

Work on groundwater should emphasize monitoring of groundwater resources (including exempt wells) and use projections, and completion and implementation of groundwater management plans throughout Puget Sound. It will require an emphasis on work in areas without current groundwater management plans that are at high risk of groundwater pollution and/or current or future demand. The Critical Aquifer Recharge Area (CARA) program (under the state's Growth Management Act) is one potential vehicle for coordinating protection of groundwater resources across Puget Sound counties to support instream flows.

Near-Term Actions

A7.3 NTA 1: **Exempt Wells. Ecology will work with tribal nations, local governments, and other partners to develop and support a consistent approach to making decisions about exempt wells, and to ensure that both the physical and legal availability of water is considered in decisions. This will include workshops on exempt well issues to be completed by 2013.**

Performance measure: Done or not.

Emerging Issues and Future Opportunities

In addition to the specific ongoing program activities and near-term actions described above, there are a number of ideas for future work that might be undertaken to address protection of freshwater flows in Puget Sound. These ideas should be an ongoing part of the regional discussion about freshwater flows, and may inform future funding decisions, programmatic priorities and guidance, and/or may become near-term actions in future Action Agenda cycles. They include:

- Establishment of a stable dedicated funding source for water resource management. The dependence on General Funds for these initiatives must be reduced for progress to be made. A funding program should address funding both for state agencies and for local governments to help build partnerships that can make progress in implementing water resource elements of the Action Agenda.
- The proper balance between establishing new instream flow rules and updating existing rules. Ecology currently has no resources to update existing rules. Diverting resources to update existing rules would slow establishment of new instream flows. In general, this is a very resource challenged area of the Action Agenda.
- Development of additional information on the effects of groundwater withdrawals on stream flows and completion of groundwater resource assessments/water mapping.
- Application of more holistic, watershed and integrated water budget and planning based approaches that would examine all the water needs in a watershed (e.g., growth, industry/agriculture, stream flows) and all the potential water resources (e.g., reclaimed water, stormwater, and rainwater harvesting) and work to best match needs and resources.
- Consideration of a comprehensive "Puget Sound Water Plan", which would integrate all of the water issues in the basin, including water rights, water quality, land use permitting, habitat protection, and watershed management, and provide a mechanism to deploy relevant programs to increase the likelihood that instream flow targets will be met. Some commenters on the draft Action Agenda suggested that additional enforcement authorities are needed to ensure instream flows are met.
- Use of water acquisition through, for example, water right leases and purchases, to restore/protect flows.
- Consideration of new implementation mechanisms for planning, these might include consideration of watershed districts, which would have independent revenue (e.g., taxation authority) and the ability to review all permits for conformity with the plan and to step in where a proposal has a watershed-wide impact and take the lead for planning, for example for flood hazard mitigation or water supply planning.

- Work with stakeholders and partners to build on existing public-private models, to support utilities adoption of demand management strategies (such as tiered pricing structures) to discourage inefficient and unnecessary use of municipal water, particularly in flow-limited areas or low flow periods.
- More specific incorporation of climate change projections throughout Puget Sound.
- The potential for work with Canadian partners in the development of groundwater management programs for transboundary aquifers such as the Abbotsford-Sumas Aquifer.
- The need to ensure adequate flow in both mainstem rivers and tributaries.

Target View: Summer Stream Flows

Summer stream flows support salmon habitat needs, other ecosystem needs, and water for people. The summer (June through October) lowest 30-day average flow is a statistical measure of flow that has been linked to salmon habitat needs.

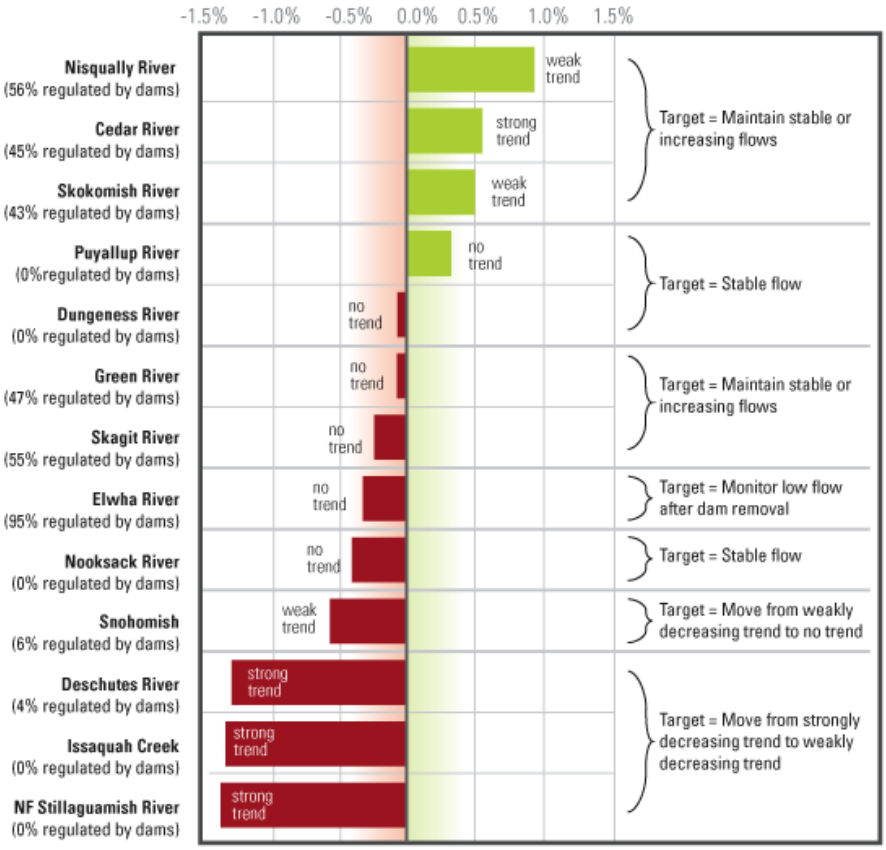
Summers in the Puget Sound region are often glorious, with comfortable temperatures and little rain. One result of this great weather is that the flow of water from rivers and streams around the Sound also declines, affecting salmon runs, wildlife, and our water supply. There are other man-made reasons for lower summer stream flows, such as new wells that tap ground water and new buildings and development that cover up the ground and decrease seepage – reducing the amount of water that would reach the stream in summer.

Of course, stream flows vary from year to year. But there are good measurements available for most of the rivers in the Puget Sound basin. The 2020 recovery target for summer stream flows is to meet the following river-specific targets:

- Maintain stable or increasing flows in highly regulated rivers: Nisqually, Cedar, Skokomish, Skagit, and Green.
- Monitor low flow in the Elwha River after dam removal.
- Maintain stable flows in unregulated rivers that currently are stable: Puyallup, Dungeness, and Nooksack.
- Restore low flows to bring the Snohomish River from a weakly decreasing trend to no trend.
- Restore low flows to bring the Deschutes River, North Fork Stillaguamish River, and Issaquah Creek from a strongly decreasing trend to a weakly decreasing trend.

The river-specific targets for stream flow are displayed in the following graph. All flows are from U.S. Geological Service gages. Most gages are near the mouth of the river, except the Deschutes River and Dungeness River gages are higher in the watershed.

Average Change in Low Water Flows in 13 Puget Sound Rivers
Percent per year, 30-day average summer low flow, 1975-2010



Source: Washington State Department of Ecology

The Action Agenda strategies most related to the summer stream flow target are:

- Protect and conserve freshwater resources to increase and sustain water availability for instream flows (A7.1, A7.3, A7.2)
- Focus land development away from ecologically important and sensitive areas (A1.1, A1.2)
- Promote appropriate reclaimed water projects (C6.5)
- Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales (C2.3, C2.5)

In the following results chain, or logic model, yellow polygons identify strategies and sub-strategies from the Action Agenda that we believe will contribute significantly towards meeting the target. Arrows to the blue boxes describe the intermediate results the strategies and actions are expected to achieve. The purple boxes show the reduced pressure on the ecosystem that is expected to occur, the green ovals show the areas of the ecosystem where the change will be observed, and the dark green square shows the recovery targets.